Quarterly Report, Second Quarter 2020

RCRA Corrective Action Program
Boeing Renton Facility
Wood Project # PS20203450.2020 The Boeing Company

Prepared for:

The Boeing Company
Seattle, Washington

August 13, 2020

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1.0 Introduction

This report provides progress reporting in conformance with Section VII.B.1 of Agreed Order No. 8191 (Order) and summarizes cleanup actions and monitoring conducted at the Boeing Renton Facility (the Facility) during the second quarter 2020 (Figure 1). This work is required under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program being performed at the Facility. Corrective action activities are performed for those solid waste management units (SWMUs), areas of concern (AOCs), and other areas where cleanup actions are ongoing. Monitoring, cleanup activities, and reporting are being conducted as part of the final remedy implementation described in the Engineering Design Report (EDR) (AMEC, 2014). The following reports detail site activities:

- The original plan presented in Appendix D of the EDR (AMEC, 2014) was superseded by the Compliance Monitoring Plan (CMP) (Amec Foster Wheeler, 2016a), and was revised in the Addendum to the CMP (CMP Addendum #1) (Amec Foster Wheeler, 2017).
- The current groundwater monitoring program is detailed in CMP Addendum #1 (Amec Foster Wheeler, 2017), and contains changes to the CMP.
- The second Addendum to the CMP (CMP Addendum #2) (Wood, 2019) was approved by the Washington State Department of Ecology (Ecology) to remove areas of sampling from the program.
- Boeing submitted a third Addendum to the CMP (CMP Addendum #3) to Ecology on June 30, 2020 (CALIBRE, 2020). This addendum contains recommendations for further modifications to the groundwater monitoring program at the Facility and was approved by Ecology in July 2020.

Groundwater monitoring and cleanup actions are being conducted at the following areas (the ongoing remedies for each of these areas are noted in parentheses):

- SWMU-168: (monitored natural attenuation [MNA]);
- SWMU-172 and SWMU-174: (bioremediation, soil vapor extraction [SVE] and monitored attenuation [MA]);
- Building 4-78/79 SWMU/AOC Group: (bioremediation and MA; SVE was decommissioned);
- Former Fuel Farm AOC Group: (MNA);
- AOC-001 and AOC-002: (bioremediation and MA);
- AOC-003: (bioremediation and MA);
- AOC-004: (bioremediation and MA);
- AOC-060: (bioremediation and MA);
- AOC-090: (bioremediation and MA);
- Building 4-70: (bioremediation and MA);
- Lot 20/Former Building 10-71 Parcel: (bioremediation and MA); and
- Apron A: (bioremediation and MA).

The background and investigation history for each affected unit or group of units is described in the Cleanup Action Plan (CAP) (AMEC, 2012) and/or EDR (AMEC, 2014). It should be noted that monitoring for the Building 10-71 area and Building 4-70 area is included in this monitoring report to maintain continuity with the monitoring program that has been conducted for these areas for several years and as approved

by Ecology; these two areas are not addressed explicitly in the CMP (Amec Foster Wheeler, 2016a) but are being addressed per Ecology's December 30, 2015, email to Boeing with comments on the CMP Addendum #1 (Amec Foster Wheeler, 2017). Monitoring for Apron A is also included, as semiannual monitoring began in this area starting in the fourth quarter 2016, as reported in the Apron A Investigation Results report (Amec Foster Wheeler, 2016b).

The goals for cleanup of groundwater at the Facility, as described in the CAP, include protection of groundwater for drinking water beneficial use at all areas of the site, and demonstration of protection of surface water beneficial uses at the conditional points of compliance (CPOCs) for each SWMU and AOC. Cleanup goals are discussed in this report for each SWMU and AOC. Discussions of the protection of groundwater for drinking water beneficial uses compare concentrations of COCs to both the current site specific cleanup levels (CULs) specified in the CAP (which were based primarily on drinking water and protection of surface water beneficial uses) and to proposed updated CULs from the CALIBRE Systems, Inc. (CALIBRE) December 17, 2019, technical memorandum (CALIBRE, 2019a), which proposed revised CULs based on Model Toxics Control Act (MTCA) criteria for potable water that are demonstrated to be protective of other exposure pathways and promulgated criteria. Ecology has made several clarifications and changes to MTCA since the draft CAP was prepared that are relevant to Facility CULs. These proposed revised CULs are referenced herein as *proposed* CULs, while the CULs specified in the CAP are referenced as *current* CULs.

This quarterly report:

- Describes work completed during the reporting quarter;
- Describes any deviations from corrective action tasks required under the Order and/or CAP;
- Describes revisions to the corrective action schedule;
- Describes work projected to occur during the next quarter, including any planned deviation from the CAP;
- Discusses remediation operation and maintenance activities conducted at the Facility during the reporting period;
- Documents monitoring activities conducted during the quarter;
- Describes and discusses trends in monitoring data;
- Assesses remediation at each area; and
- Assesses attainment of the current CULs at the CPOCs.

This report presents this information for the second quarter 2020, the period from April through June 2020.

1.1 Quarterly progress reporting

In accordance with the requirements of the Order, corrective action activities were conducted at the Facility, as described in this report. As approved by Ecology in their letter dated November 18, 2015, progress reporting is conducted on a quarterly basis in conjunction with monitoring, operations, and maintenance activities conducted under the CAP.

1.1.1 Work completed in the second quarter 2020

The following work was completed during the second quarter 2020, the period from April through June 2020:

- Groundwater monitoring for the second quarter 2020 was completed during May 2020.
- On behalf of Boeing, Wood submitted the first quarter 2020 report to Ecology on May 15, 2020.
- Recommendations for revisions to the compliance monitoring program was submitted on June 30, 2020.

1.1.2 Deviations from required tasks

No deviations from tasks required in the Order occurred during this activity period.

1.1.3 Deviations from CAP

There were no deviations from the CAP during this activity period. Modifications proposed in CMP Addendum #3 (CALIBRE, 2020), and approved by Ecology, will be incorporated in the next sampling event.

1.1.4 Schedule revisions

There were no significant revisions to the schedule for this reporting period. Approval of modifications proposed in CMP Addendum #3 (CALIBRE, 2020) included a change from both quarterly and semi-annual sampling to a sitewide semi-annual program with future sampling to occur during the wet and dry seasons, which will occur in February and August. This schedule is detailed in CMP Addendum #3 and is reproduced as Table 1 in this report. This revised sampling schedule will begin in August 2020.

1.1.5 Work projected for the next quarter

The following work is projected for the 2020 dry season event:

- Reporting will be completed in accordance with the Order, CAP, EDR, and changes approved by Ecology, including those modifications proposed in CMP Addendum #3 (CALIBRE, 2020).
- Nitrate and sulfate injections will be performed for the Building 4-78/79 area.
- Substrate injections to continue Enhanced Reductive Dechlorination treatment in areas SWMU 172/174, Building 4-78/79 SWMUs, AOC-060, AOC-090, Apron A and AOC-003.
- Soil with total petroleum hydrocarbons (TPH) exceeding current CULs within unsaturated and smear zones is planned for excavation on the east side of Building 4-79. Groundwater elevations are currently being monitored to determine if water levels will be low enough to allow for sufficient excavations to occur in the 2020 dry season.

2.0 Groundwater sampling methodology

Groundwater was sampled and analyzed as described in Appendix A. These procedures are in accordance with the methods specified in the CMP (Amec Foster Wheeler, 2016a) and CMP Addendum #1 (Amec Foster Wheeler, 2017). Table A-1 summarizes the current groundwater monitoring program and constituents of concern (COCs) specified in the CAP and revised in the CMP Addendum #1 (Amec Foster Wheeler, 2017) for all Facility corrective action areas. Table A-2 summarizes the current groundwater monitoring program for the corrective action areas that include MNA or MA as part of the cleanup

remedy specified in the CAP. Tables A-1 and A-2 also include Building 4-70, Lot 20/Former Building 10-71, and Apron A, which were not included in the CAP. Any changes or exceptions to the sampling or analytical methods cited in Appendix A during the quarter are described in the applicable subsections in Section 3. The field data sheets, which document the groundwater sample collection and field parameter monitoring for each well sampled during this quarter, are included in Appendix B.

The analytical methods, field duplicate, lab duplicate, and matrix spike/matrix spike duplicate frequencies are specified in the Quality Assurance Project Plan (Amec Foster Wheeler, 2016c). The full analytical reports provided by the laboratory are provided separately on compact disc. The data validation memoranda are included in Appendix C.

3.0 Corrective action activities completed during quarter

This section describes the corrective action activities conducted at the Facility during the second quarter 2020. Operation of the SVE system at SWMU-172/174 continued during the second quarter, as discussed in Section 3.2.1.2. Quarterly compliance monitoring was conducted in accordance with the CMP (Amec Foster Wheeler, 2016a) and CMP Addendum #1 (Amec Foster Wheeler, 2017).

3.1 SWMU-168

SWMU-168 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the second quarter 2020.

3.2 SWMU-172 and SWMU-174

This section describes corrective action activities conducted at these two SWMUs. The cleanup remedy for SWMU-172 and SWMU-174 is a combination of bioremediation, SVE, and MA. Figure 2 shows the layout of the groundwater monitoring wells and the remediation system for these SWMUs.

3.2.1 Cleanup action activities

3.2.1.1 Installation/construction activities

No installation/construction activities were conducted for these SWMUs during the second quarter.

3.2.1.2 Soil vapor extraction and bioremediation operations

The SVE system at SWMU-172 and SWMU-174 was shut down on March 13, 2020, due to stay-at-home orders during the COVID-19 pandemic. The system was restarted on May 19, 2020. These events are recorded in Figures 3, 4, and 5. Details for system operations are included in the SVE operations and monitoring summary prepared by CALIBRE and included as Appendix E.

3.2.2 Compliance monitoring plan deviations

No deviations from the CMP occurred for this area during the second quarter.

3.2.3 Water levels

Groundwater elevations for the SWMU-172 and SWMU-174 area measured during the second quarter 2020 are summarized in Table 2 and shown on Figure 2. The contoured water level elevation data for May 2020 show that groundwater generally flows northeast from SWMU-172 and SWMU-174 toward the Cedar River Waterway, with an approximate hydraulic gradient of 0.011 feet per foot.

3.2.4 Groundwater monitoring results

Groundwater in this area is monitored following the schedules presented in Tables A-1 and A-2 in Appendix A. Results for primary geochemical indicators are presented in Table 3; results for the SWMU-172 and SWMU-174 area COCs are presented in Table 4.

3.2.4.1 Monitored attenuation/geochemical indicators

The geochemical indicator results are presented in Table 3. Total organic carbon (TOC) concentrations ranged from 1.82 milligrams per liter (mg/L) to 8.30 mg/L for all SWMU-172 and SWMU-174 monitoring wells. The pH measurements for all SWMU-172 and SWMU-174 monitoring wells are near neutral. The other natural attenuation parameter results indicate that geochemical conditions were generally uniform; the oxidation/reduction potential (ORP) results during this event vary greatly across the unit.

3.2.4.2 COC results for source and downgradient plume areas

Table 4 lists second quarter 2020 analytical results for the SWMU-172 and SWMU-174 COCs. Figures 3 and 4 show historical trend plots for tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride (VC), and cis 1,2 dichloroethene (cis-1,2-DCE) in source area wells GW152S and GW153S, and in downgradient plume area wells GW172S and GW173S. Flow generally moves from the vicinity of source area well GW152S to downgradient plume area well GW172S, and from source area well GW153S to downgradient plume area well GW173S. PCE and TCE are the chlorinated solvents that were used at the Facility, and cis-1,2-DCE and VC are breakdown products resulting from biodegradation processes.

As shown in Table 4, cis-1,2-DCE, TCE, PCE, and VC concentrations exceeded the *current* CPOC CULs in the groundwater from both source area and downgradient plume area wells. As shown in Figures 3 and 4, the concentrations of COCs in groundwater from source area wells GW152S and GW153S and downgradient plume area wells GW172S and GW173S generally remained stable or decreased. All cis-1,2-DCE, TCE, and PCE concentrations in groundwater from the source area and downgradient plume area wells meet the MTCA criteria for potable water supply (and the *proposed* CULs); VC remains above the potable water criteria in GW153S at 0.266 micrograms per liter (µg/L) and GW172S at 0.369 µg/L.

Arsenic was detected above the *current* CUL in the groundwater from all source area and downgradient plume area wells. As shown in Figure 5, the arsenic concentrations in the groundwater decreased in both source area wells and both downgradient plume area wells during the second quarter sampling event. This observed range of arsenic in groundwater is consistent with the naturally occurring background arsenic range reported by Ecology[1] (Ecology 2018). A background arsenic concentration of 10 µg/L is a typical naturally occurring value presented by Ecology (2018).

Copper concentrations were below the *current* CUL in all of the source area wells and downgradient plume wells. Lead was detected above the *current* CUL in the groundwater from source area well GW152S and downgradient plume area well GW172S. Metals concentrations were below the applicable MTCA criteria for potable water supply, except for arsenic in GW172S and GW173S.

3.2.4.3 COC results for conditional point of compliance area

Results from the CPOC area wells are presented in Table 4 and trend charts for cis-1,2-DCE, TCE, and VC for all CPOC area wells are presented in Figure 6. As shown in Table 4, cis-1,2-DCE was detected above the *current* CUL in the groundwater from all CPOC area wells at concentrations ranging from 0.036 to

[1] The 2018 Ecology background study is based on testing from over 2,500 supply wells used for potable supply in Puget Sound Basin. All samples are from water supply aquifers with no known anthropogenic impacts.

0.352 µg/L; TCE was detected above the *current* CUL in the groundwater from GW235I; and VC was detected above the *current* CUL in the groundwater from GW232S. PCE was not detected in the groundwater from the CPOC wells and is not shown in Figure 6. As shown on Figure 6, concentrations of cis-1,2-DCE have exceeded the *current* CUL in the groundwater from CPOC wells since compliance monitoring began, but are generally stable. The concentrations of TCE appear generally stable across CPOC wells, and the concentrations of VC in CPOC wells have been stable and below the *current* CUL since December 2015, except for GW232S.

Arsenic was detected above the *current* CUL in the groundwater from all CPOC area wells except for GW233I and GW235I, copper and lead were only detected above the *current* CULs in the groundwater from CPOC area well GW236S (Table 4). Figure 7 shows arsenic, copper, and lead concentration trends since the beginning of compliance monitoring in groundwater from the CPOC area wells. As shown in Figure 7, arsenic, copper, and lead concentrations have decreased over the last two quarters and have come back into the previously stable range for all CPOC area wells.

While select COC concentrations exceed the *current* CUL in the groundwater from select CPOC wells, all of these COC concentrations were below the applicable MTCA criteria for potable water supply in the groundwater from all CPOC area wells, with the exception of arsenic in GW234S.

3.3 Building 4-78/79 SWMU/AOC group

This section describes corrective action activities conducted at the Building 4-78/79 SWMU/AOC Group during the second quarter 2020. The cleanup remedy for this SMWU/AOC group is bioremediation and MA; SVE was decommissioned. Figure 8 shows the location of groundwater monitoring wells, bioremediation wells, and SVE wells for this area.

3.3.1 Cleanup action activities

3.3.1.1 Installation/construction activities

No installation/construction activities were conducted for these SWMUs during the second quarter.

3.3.1.2 Soil vapor extraction and bioremediation operations

As previously reported during 2018 monitoring events, the SVE system at Building 4-78/79 SWMU/AOC Group was shut down during the first quarter of 2018, during which rebound testing was implemented. Soil samples were collected during the second quarter 2018 to assess the attainment of current soil CULs, and results were reported in the second quarter monitoring report (Wood, 2018). These CULs were attained with one exception: the sample from 4.5 feet below ground surface at well PP13 had a concentration of TPH as gasoline (TPH-G) of 147 milligrams per kilogram (mg/kg), and the field duplicate was 131 mg/kg, above the current CUL of 30 mg/kg.

A revised work plan (CALIBRE, 2019b) for excavating the soils near PP13 and GW031S (shown in Figure 8) was submitted to Ecology on May 8, 2019, in response to a request from Ecology. The investigation described in the work plan was conducted on June 13 and 14, 2019, and the results were submitted to Ecology in November 2019 (CALIBRE 2019c). Groundwater elevations were monitored during subsequent monitoring events to determine the best time for soil removal activities. As documented in an email to Ecology dated October 22, 2019, the soil excavation work had not been completed because groundwater levels were not low enough before the start of the rainy season to schedule the work. TPH-G concentrations in groundwater continue to be monitored and groundwater levels are being monitored approximately biweekly to determine if excavation work can be completed in the third quarter.

No new nitrate/sulfate injections have been completed since January 2020. Sampling occurred in February 2020. Trend charts for cis-1,2-DCE and benzene in the injection wells are presented in Figure 9, and charts for TCE and VC in the injection wells are presented in Figure 10.

3.3.2 Compliance monitoring plan deviations

No deviations from the CMP occurred for this area during the second quarter.

3.3.3 Water levels

Table 5 presents the groundwater elevations measured during the second quarter 2020 groundwater monitoring event at the Building 4-78/79 SWMU/AOC group. As shown in Figure 8, the observed direction of groundwater flow from the source area during May 2020 is generally to the west-southwest, with a hydraulic gradient of 0.002.

3.3.4 Groundwater monitoring results

Results for primary geochemical indicators are presented in Table 6; results for the COCs for Building 4-78/79 SWMU/AOC Group are presented in Table 7. Groundwater at this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A.

3.3.4.1 Natural attenuation/geochemical indicators

The geochemical indicator results are presented in Table 6. In general, source area, downgradient, and CPOC area wells had low levels of dissolved oxygen, with the exception of GW038S. The pH was near neutral at greater than 6.0 standard units in all monitoring wells. The downgradient plume area wells showed reducing conditions with negative ORP readings. Reducing conditions indicate the dechlorination of volatile organic compounds and are likely throughout this area. Results for the other primary geochemical indicators were fairly consistent in all wells. TOC concentrations in source area wells ranged from 5.52 to 14.61 mg/L.

3.3.4.2 COC results for source and downgradient plume areas

Table 7 lists second quarter 2020 analytical results for the Building 4-78/79 SWMU/AOC Group COCs. The CULs established in the CAP for the CPOC are also presented on Table 7. Figures 11 and 12 are trend charts showing historical trends for COCs for four groundwater monitoring wells that have a history of frequent detections. Trend charts have not been prepared for groundwater monitoring wells or COCs that do not have a history of frequent detections.

As shown in Table 7, benzene, cis-1,2-DCE, and VC were detected in groundwater from several source area wells at concentrations above the *current* CPOC CULs. In source area wells GW039S and GW243I, all COCs were below *current* CULs. TCE was not detected in the groundwater from source area wells. TPH-G was detected in the groundwater from source area well GW031S, at a concentration of 1,880 µg/L (the field duplicate concentration was 1,790 µg/L). TPH-G was also detected in the groundwater from source area well GW033S at a concentration of 301 µg/L, below the *current* CPOC CUL. All COCs were non-detect in the groundwater from the downgradient plume area wells.

Figure 11 shows trends for selected COCs for source area wells GW031S and GW033S, and Figure 12 shows trends for selected COCs for source area well GW034S and downgradient plume area well GW209S. COC concentrations in the groundwater from GW031S and GW033S are generally consistent with historical results and trends. The groundwater from GW033S historically had the highest concentrations of cis-1,2-DCE and VC prior to the Duct Bank dewatering project.

COC concentrations in groundwater from source area well GW034S and downgradient plume area well GW209S (Figure 12) remain stable with concentrations below detection, except for the VC concentration in the groundwater from source area well GW034S over the past year of monitoring. No new nitrate/ sulfate injections have been completed since January 2020.

Concentrations of COCs in the groundwater from select source area wells remain above the MTCA criteria for potable water supply (specifically benzene, VC, and TPH-G). Active treatment is ongoing. Concentrations of COCs for all analytes in all the groundwater from the downgradient plume area wells are below the applicable MTCA criteria for potable water.

3.3.4.3 COC results for conditional point of compliance area

Groundwater monitoring results from the second quarter for the CPOC area are summarized in Table 7. Trends for CPOC wells GW143S, GW237S, and GW240D are shown in Figures 13 through 15. Benzene was not detected in groundwater from the CPOC area wells, except GW237S at a concentration of 1.03 µg/L, which is above the *current* CUL (Table 7). As shown in Figure 13, benzene has been sporadically detected in the groundwater from CPOC area well GW237S but has not been detected above the *current* CUL in the groundwater from any of the other CPOC wells. The benzene concentration in the groundwater from CPOC well GW237S was above the *current* CUL during the second quarter. For the CPOC area wells, all CVOCs (cis-1,2-DCE, TCE, and VC) are below the *current* CULs and are non-detect, and all COCs were below the *proposed* CULs and the MTCA criteria for potable water supply.

3.4 Former Fuel Farm AOC group

The Former Fuel Farm AOC group is monitored semiannually in May and November. The final remedy for the Former Fuel Farm is MNA.

3.4.1 Cleanup action activities

No installation/construction activities were conducted for this cleanup action area during the second quarter.

3.4.2 Compliance monitoring plan deviations

No deviations from the CMP occurred for this area during the second quarter.

3.4.3 Water levels

Groundwater elevations for the Former Fuel Farm AOC Group measured during the second quarter 2020 are summarized in Table 8 and shown on Figure 16. Groundwater elevation contours are not shown on Figure 16 due to anomalous measurements. Groundwater flow direction is shown based on historical information from this AOC and is to the southwest.

3.4.4 Groundwater monitoring results

Results for primary geochemical indicators are presented in Table 9; results for COCs for the Former Fuel Farm AOC Group are presented in Table 10. Groundwater in this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A.

3.4.4.1 Monitored natural attenuation indicators

The geochemical indicator results are presented in Table 9. Results in Table 9 indicate that geochemical conditions are generally consistent throughout the Former Fuel Farm AOC Group. The pH in CPOC area well GW212S was below 6.0 standard units. All of the remaining wells had a pH above 6. Dissolved oxygen

was generally low across wells in this area, and ORP was highly variable. The geochemical indicators indicate that conditions are generally conducive to natural attenuation of the COCs for the Former Fuel Farm AOC Group.

3.4.4.2 COC results for source area

Table 10 lists second quarter 2020 analytical results for the Former Fuel Farm AOC Group COCs. The CULs established in the CAP are also presented on Table 10. As shown in Table 10, TPH in the diesel and Jet A ranges was not detected above the reporting limit in the groundwater from the single source area well (GW255S).

3.4.4.3 COC results for conditional point of compliance area

CPOC area monitoring results are presented in Table 10. Figure 17 shows trend data for CPOC area wells GW211S, GW221S, and GW224S. Figure 17 shows that the second quarter results for these wells are consistent with the historical monitoring results since late 2013.

Samples were analyzed for TPH in the diesel and Jet A ranges, both with and without a silica gel cleanup, which can be performed on samples to remove polar organic compounds. The results after silica gel cleanup are therefore considered to be more accurate. As shown in Table 10, concentrations of both TPH as diesel and Jet A were lower after silica gel cleanup had been performed (except in the case of the groundwater from GW221S). Generally, detections above the *current* CULs decreased to below the *current* CULs after silica gel cleanup. We propose to continue to analyze samples from GW211S, GW221S, and GW224S using the silica gel procedure during future sampling events.

3.5 AOC-001 and AOC-002

Apron R near AOC-001 and AOC-002 is under reconstruction, therefore, no monitoring was conducted for this area during the second quarter 2020. Monitoring wells in these areas were removed on November 25, 2019. The wells affected by this work are noted in Table A-1.

3.6 AOC-003

This section describes corrective action activities conducted at AOC-003 for the second quarter 2020. The cleanup remedy for this AOC is bioremediation and MA. Figure 18 shows the location of groundwater monitoring and bioremediation wells at AOC-003, as well as the groundwater elevations measured during this monitoring event.

3.6.1 Cleanup action activities

No installation/construction activities were conducted for this cleanup action area during the second quarter.

3.6.2 Compliance monitoring plan deviations

Groundwater samples were collected from the CPOC area wells during the second quarter. Following the schedule presented in Table A-1, CPOC area wells are sampled quarterly, and source and downgradient area wells are sampled semiannually in the first and third quarters.

3.6.3 Water levels

Table 11 presents the groundwater elevations measured during the second quarter 2020 monitoring event at AOC-003. Figure 18 shows the groundwater elevations from this event. Groundwater flow directions cannot be determined from the available groundwater elevation data.

3.6.4 Groundwater monitoring results

Groundwater at AOC-003 is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 12; results for the AOC-003 COCs are presented in Table 13.

3.6.4.1 Monitored attenuation/geochemical indicators

The geochemical indicator results are presented in Table 12. Results in Table 12 indicate that geochemical conditions are generally consistent throughout this AOC. Negative ORP readings were observed during this monitoring event, indicating reducing conditions.

3.6.4.2 COC results for source and downgradient plume areas

Source area and downgradient plume area wells are monitored semiannually in the first and third quarters; therefore, no monitoring for source area or downgradient plume wells was conducted in the second quarter.

3.6.4.3 COC results for conditional point of compliance area

Groundwater from the two CPOC area wells had no detections of PCE, TCE or cis-1,2-DCE above their respective *current* CULs. VC was detected at concentrations above the *current* CUL in the groundwater from both CPOC wells (GW247S and GW248I), at concentrations of 0.409 and 0.546 µg/L, respectively.

VC concentrations exceed the *proposed* CUL in the groundwater from CPOC wells, as detailed above, and remain above the applicable MTCA criteria for potable water supply in both CPOC wells.

3.7 AOC-004

AOC-004 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the second quarter 2020.

3.8 AOC-060

AOC-060 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the second quarter 2020.

3.9 AOC-090

AOC-090 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the second quarter 2020.

3.10 Building 4-70 area

The Building 4-70 Area is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the second quarter 2020.

3.11 Lot 20/Former Building 10-71 Parcel

This section describes corrective action activities conducted for this area during the second quarter 2020. Figure 19 shows the locations of the groundwater monitoring wells and the bioremediation injection system at the Lot 20/Former Building 10-71 Parcel, as well as the groundwater elevations measured during the second quarter. The Lot 20/Former Building 10-71 Parcel was not included in the EDR but was later added to the CMP (Amec Foster Wheeler, 2016a) and has been regularly monitored in conjunction with the Facility corrective action areas. The cleanup remedy for the Lot 20/Former Building 10-71 Parcel is

bioremediation and MA. This area is monitored semiannually in the second and fourth quarters, in accordance with Table A-1 in Appendix A.

3.11.1 Cleanup action activities

No construction or operations work was conducted for the Lot 20/Former Building 10-71 Parcel during the second quarter.

3.11.2 Water levels

The groundwater elevations measured during the second quarter at the Lot 20/Former Building 10-71 Parcel are presented in Table 14 and on Figure 19. Groundwater contours are not shown on Figure 19 because the three monitoring wells measured are arranged nearly in a straight line and do not provide enough water level data to prepare contours. Based on the second quarter water level measurements, the apparent groundwater flow appears to be generally to the northwest.

3.11.3 Groundwater monitoring results

Results for primary geochemical indicators for groundwater from the Lot 20/Former Building 10-71 Parcel monitoring wells are presented in Table 15; results for COCs for the Lot 20/Former Building 10-71 Parcel monitoring wells are presented in Table 16. Groundwater in this area is monitored following the schedule presented in Tables A-1 in Appendix A.

3.11.3.1 Monitored attenuation/geochemical indicators

The geochemical indicator results are presented in Table 15. The pH in groundwater from the three monitoring wells (10-71-MW1, 10-71-MW2, and 10-71-MW4) of the Lot 20/Former Building 10-71 Parcel were above 6 standard units. All remaining parameters in the groundwater from these monitoring wells appear uniform. Results in Table 15 indicate that geochemical conditions are generally consistent throughout this AOC and are generally conducive to biodegradation of the COCs for this AOC.

3.11.3.2 COC results

Second quarter analytical results for the Lot 20/Former Building 10-71 Parcel COCs are presented in Table 16. The concentrations of all of the COCs—cis-1,2-DCE, toluene, TCE, and VC—in the groundwater from Lot 20/Former Building 10-71 Parcel monitoring wells were below detection, and the detection limits are lower than the applicable MTCA criteria for potable water supply.

3.12 Apron A area

This section describes corrective action activities conducted at the Apron A area during the second quarter 2020. The cleanup remedy proposed for the Apron A area is bioremediation and MA. Figure 20 shows the locations of the groundwater monitoring wells in the Apron A area.

3.12.1 Cleanup action activities

No construction or operations work was conducted in the Apron A area during the second quarter.

3.12.2 Water levels

The depth to groundwater measured during the second quarter at Apron A are presented in Table 17 and on Figure 20. Groundwater elevations are not available because the top of casing elevations were never surveyed. Groundwater flow directions cannot be determined from the available depth to groundwater data.

3.12.3 Groundwater monitoring results

Results for primary geochemical indicators for groundwater from groundwater monitoring wells GW262S and GW264S are presented in Table 18; results for COCs from these wells are presented in Table 19. Groundwater in this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A.

3.12.3.1 Monitored attenuation/geochemical indicators

Geochemical parameters are presented in Table 18. TOC concentrations in the monitoring wells were slightly elevated during the second quarter 2020 monitoring event. pH and dissolved oxygen were conducive to a reducing environment for dechlorination of volatile organic compounds and ORP readings were also low during this monitoring event.

3.12.3.2 COC results

Second quarter analytical results for the Apron A COCs (cis-1,2-DCE and VC) are presented in Table 19. Cis-1,2-DCE was not detected in the groundwater from GW262S or GW264S. VC was not detected in the groundwater from monitoring well GW262S, but was detected in the groundwater from monitoring well GW264S at a concentration of 1.48 µg/L, which is above the applicable MTCA criteria for potable water supply.

4.0 References

AMEC Environment & Infrastructure, Inc. (AMEC), 2012, Draft Cleanup Action Plan, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, September.

AMEC, 2014, Draft Engineering Design Report, Boeing Renton Cleanup Plan Implementation, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, July.

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016a, Compliance Monitoring Plan, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, February.

Amec Foster Wheeler, 2016b, Apron A Investigation Results, Renton Municipal Airport – Boeing Apron A Renton, Washington, June.

Amec Foster Wheeler, 2016c, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, February.

Amec Foster Wheeler, 2017, Addendum to the Compliance Monitoring Plan, Boeing Commercial Airplane Group, Renton Facility. February 15.

CALIBRE Systems, Inc. (CALIBRE), 2019a, Cleanup Levels in Groundwater at the Boeing Renton Plant, December 17.

CALIBRE, 2019b, Plan for Evaluation of Soils around Probe PP13 at Building 4-78/4-79 SWMU/AOC Group; Boeing Renton Site, April 29.

CALIBRE, 2019c, Soils Probes at Building 4-78/4-79 SWMU/AOC Group; Boeing Renton Site, November 21.

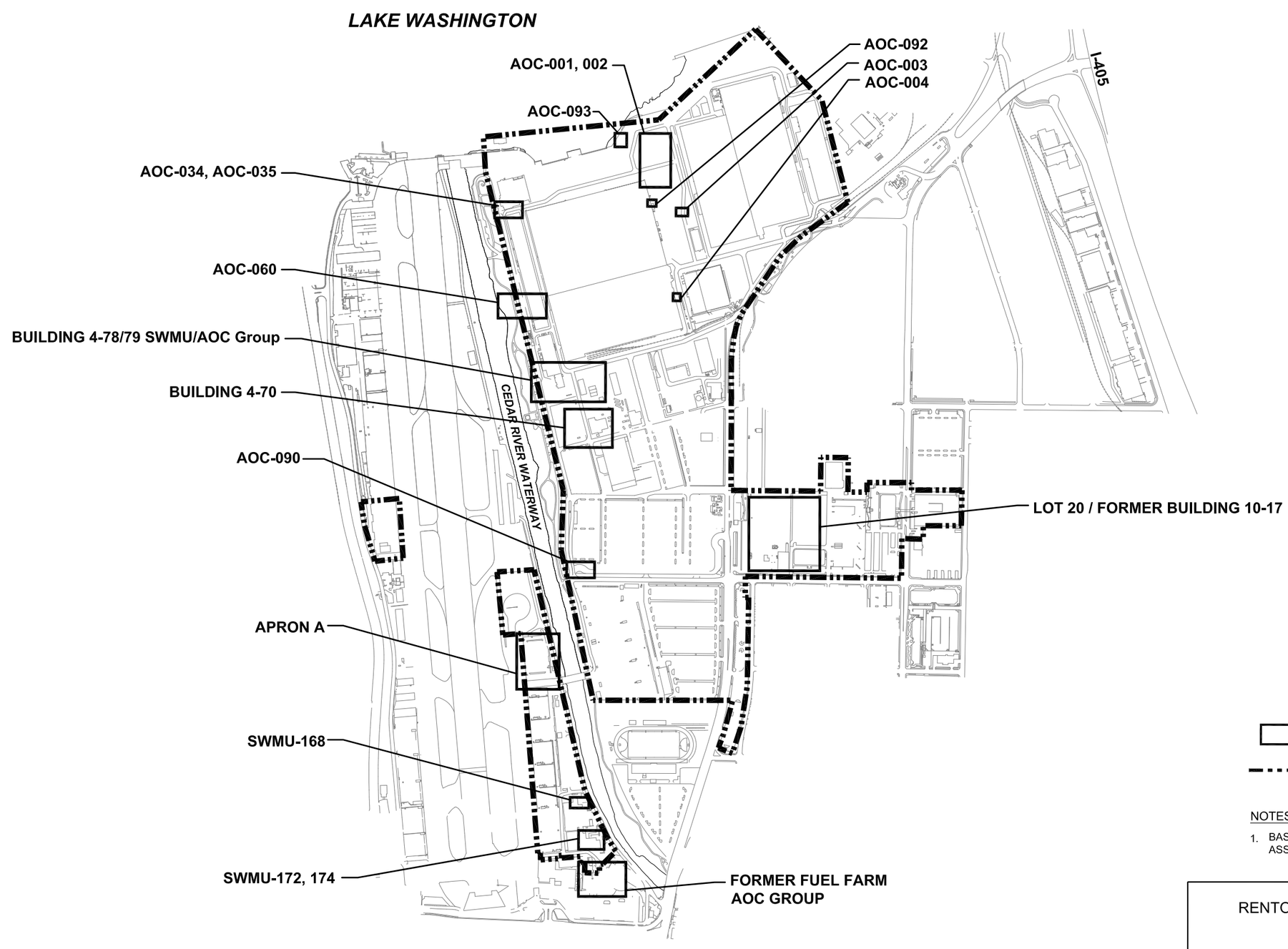
CALIBRE, 2020, Evaluation of Recent Groundwater Sampling at the Boeing Renton Facility. Recommendation for Modifications to Compliance Monitoring Plan. June 30.

Washington State Department of Ecology (Ecology), 2018, Natural Background Groundwater Arsenic Concentrations in Washington State, Review Draft. May. Publication No. 14-09-044.

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2018, Quarterly report, second quarter 2018, RCRA Corrective Action Program, Boeing Renton Facility.

Wood, 2019, Addendum to the Compliance Monitoring Plan – AOC-034/035, Boeing Commercial Airplane Group, Renton Facility. April 12.

Figures



LEGEND

GENERAL LOCATION OF SWMUs AND AOCs

FACILITY BOUNDARY

NOTES

1. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES INC., DECEMBER, 1994

0 400 800

APPROXIMATE SCALE IN FEET

RENTON SWMU AND AOC LOCATIONS

Boeing Renton Facility
Renton, Washington

By: APS	Date: 06/30/20	Project No. PS20203450
wood.		Figure 1

BOEING

Plot Date: 06/30/20 - 8:37am, Plotted by: adam.stenberg
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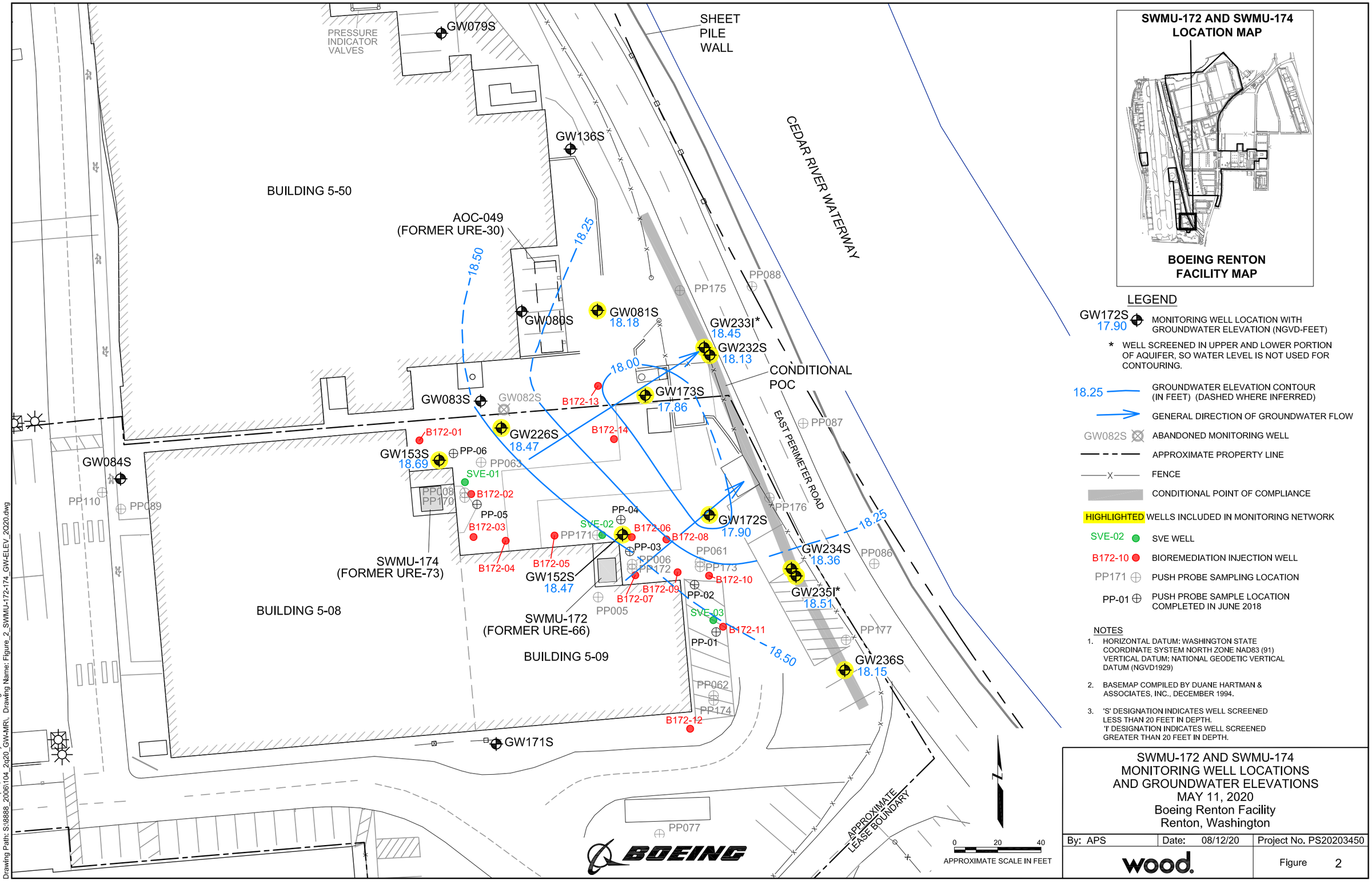
PRESSURE INDICATOR VALVES
GW079S
SHEET PILE WALL
CEDAR RIVER WATERWAY
GW136S
BUILDING 5-50
AOC-049 (FORMER URE-30)
18.50
18.25
PP175
PP088
GW081S
18.18
GW080S
GW233I*
18.45
GW232S
18.13
18.00
CONDITIONAL POC
GW083S
GW082S
B172-13
GW173S
17.86
EAST PERIMETER ROAD
PP087
B172-01
GW226S
18.47
B172-14
GW153S
18.69
PP-06
PP063
SVE-01
GW084S
PP008
PP170
B172-02
PP110
PP089
PP-05
B172-03
PP-04
SVE-02
B172-06
B172-08
PP171
GW172S
17.90
PP176
18.25
PP-03
GW234S
18.36
PP086
PP061
PP006
PP172
PP173
B172-10
SWMU-174 (FORMER URE-73)
B172-04
B172-05
GW152S
18.47
B172-09
PP-02
GW235I*
18.51
B172-07
PP005
SVE-03
B172-11
BUILDING 5-08
SWMU-172 (FORMER URE-66)
PP-01
18.50
PP177
BUILDING 5-09
GW236S
18.15
PP062
PP174
B172-12
GW171S
PP077
APPROXIMATE LEASE BOUNDARY
0
20
40
APPROXIMATE SCALE IN FEET
N
SWMU-172 AND SWMU-174 LOCATION MAP
BOEING RENTON FACILITY MAP
LEGEND
GW172S 17.90 MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
* WELL SCREENED IN UPPER AND LOWER PORTION OF AQUIFER, SO WATER LEVEL IS NOT USED FOR CONTOURING.
18.25 GROUNDWATER ELEVATION CONTOUR (IN FEET) (DASHED WHERE INFERRED)
GENERAL DIRECTION OF GROUNDWATER FLOW
GW082S ABANDONED MONITORING WELL
APPROXIMATE PROPERTY LINE
FENCE
CONDITIONAL POINT OF COMPLIANCE
HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK
SVE-02 SVE WELL
B172-10 BIOREMEDIATION INJECTION WELL
PP171 PUSH PROBE SAMPLING LOCATION
PP-01 PUSH PROBE SAMPLE LOCATION COMPLETED IN JUNE 2018
NOTES
1. HORIZONTAL DATUM: WASHINGTON STATE COORDINATE SYSTEM NORTH ZONE NAD83 (91) VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM (NGVD1929)
2. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994.
3. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 20 FEET IN DEPTH. 'I' DESIGNATION INDICATES WELL SCREENED GREATER THAN 20 FEET IN DEPTH.
SWMU-172 AND SWMU-174
MONITORING WELL LOCATIONS
AND GROUNDWATER ELEVATIONS
MAY 11, 2020
Boeing Renton Facility
Renton, Washington
By: APS
Date: 08/12/20
Project No. PS20203450
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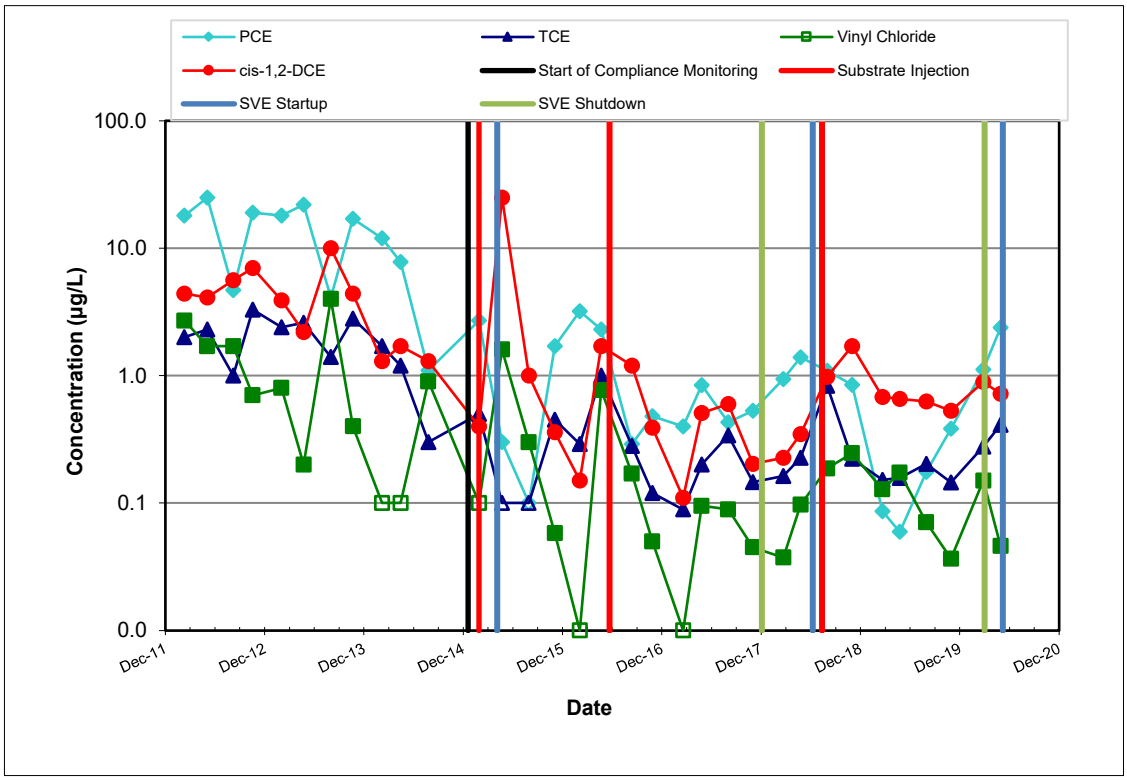
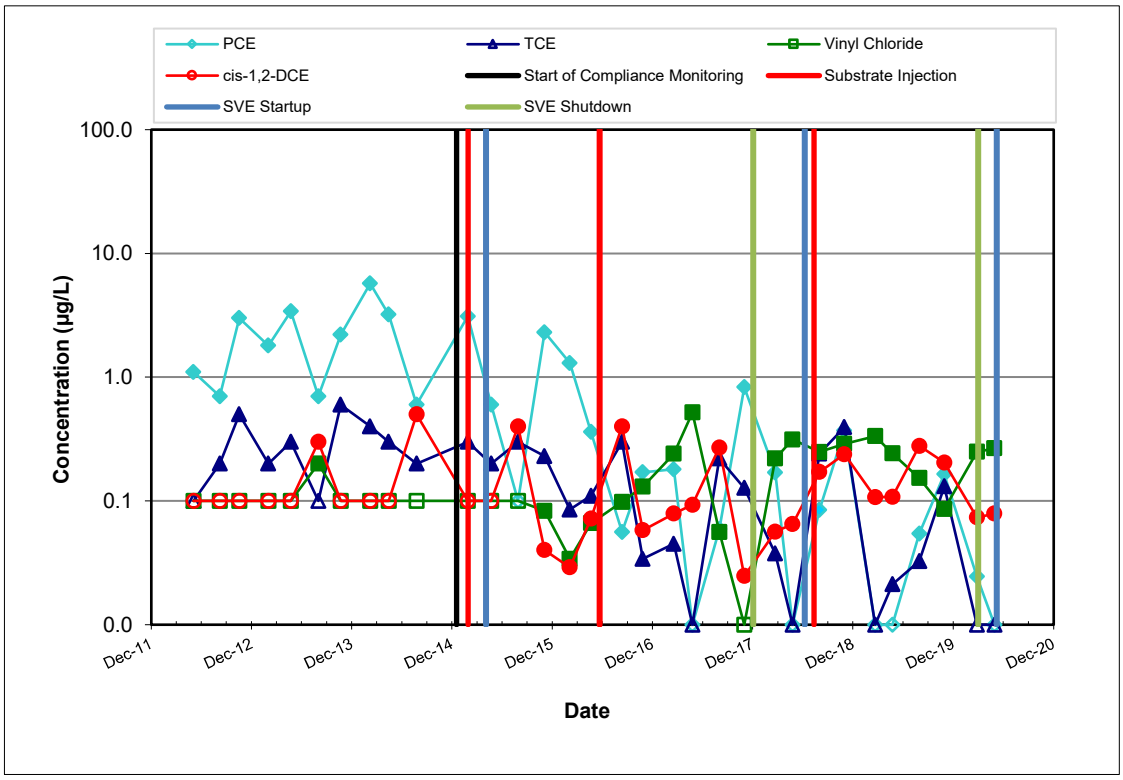


SOURCE AREA WELL GW152S



SOURCE AREA WELL GW153S

Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	SWMU-172 AND SWMU-174 TREND PLOTS FOR SOURCE AREA WELLS GW152S AND GW153S Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 3

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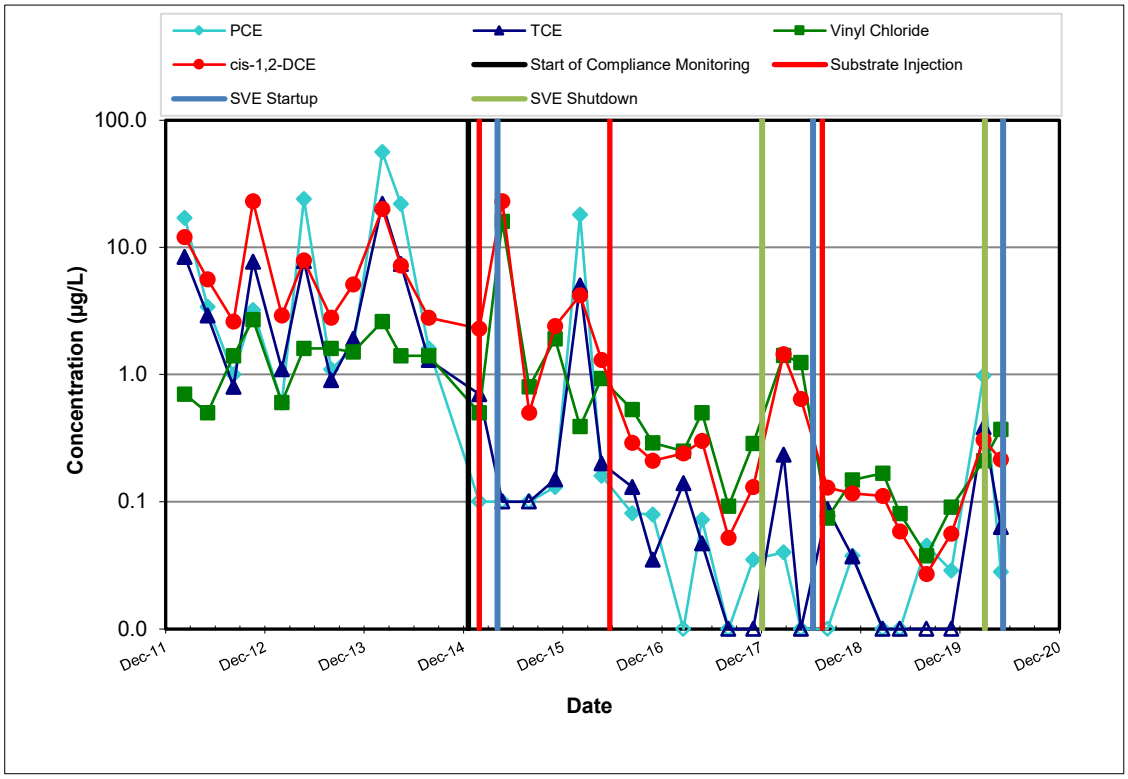
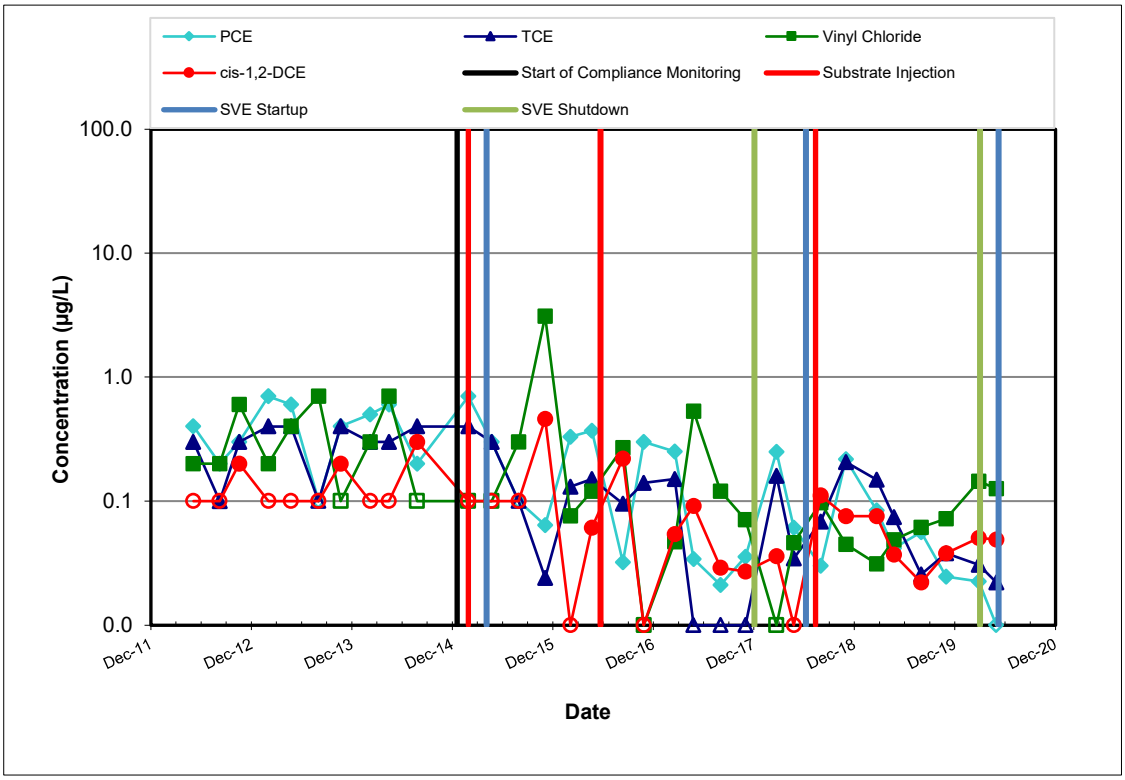


DOWNGRADIENT PLUME AREA WELL GW172S



DOWNGRADIENT PLUME AREA WELL GW173S

Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	SWMU-172 AND SWMU-174 TREND PLOTS FOR DOWNGRADIENT PLUME AREA WELLS GW172S AND GW173S Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 4

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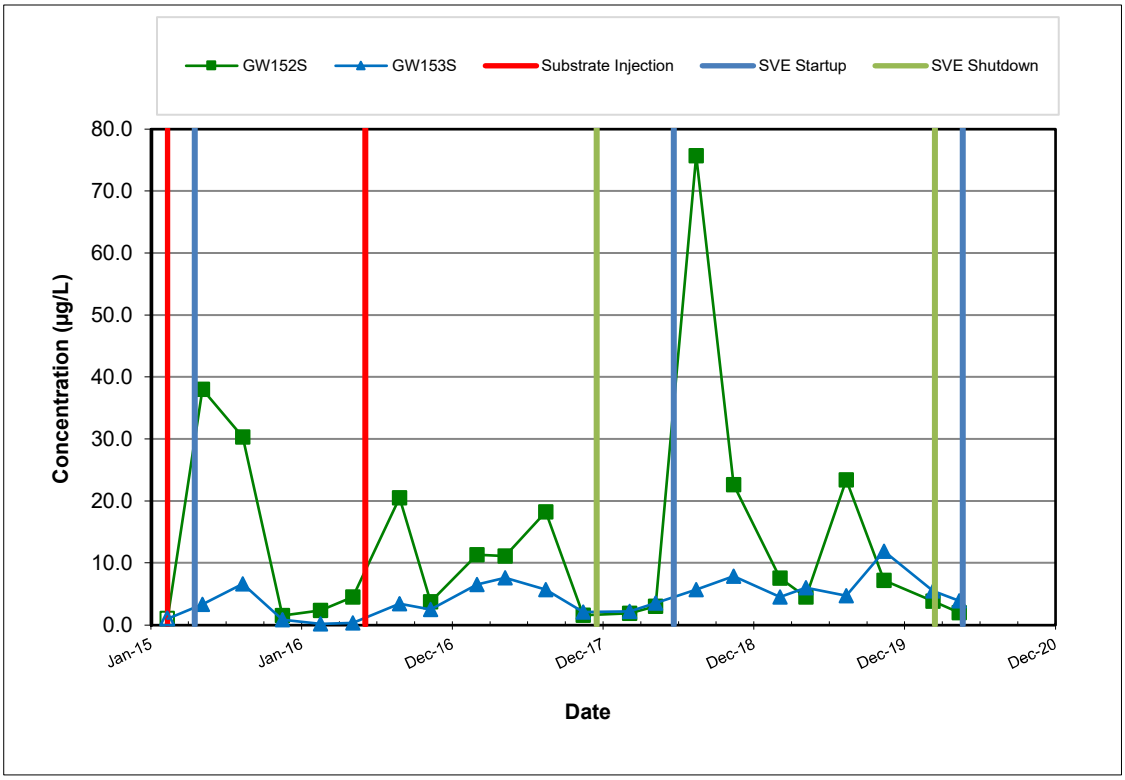
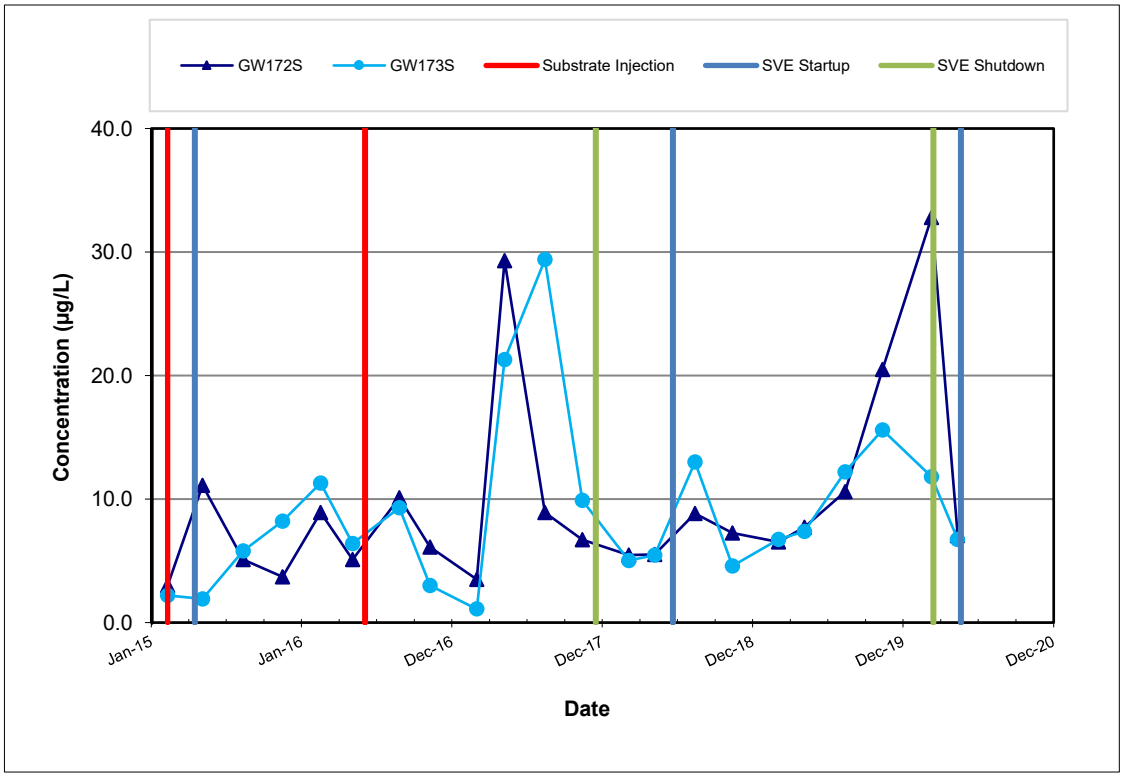


TOTAL ARSENIC IN SOURCE AREA WELLS



TOTAL ARSENIC IN DOWNGRADIENT PLUME AREA WELLS

Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	SWMU-172 AND SWMU-174 TREND PLOTS FOR ARSENIC IN SELECT SOURCE AREA AND DOWNGRADIENT PLUME AREA WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 5

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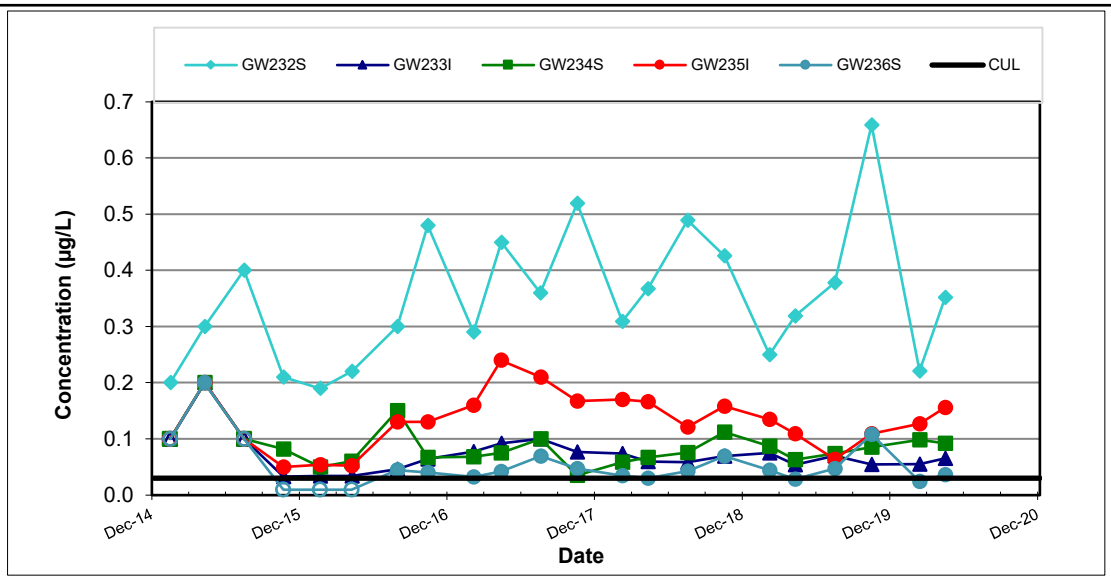
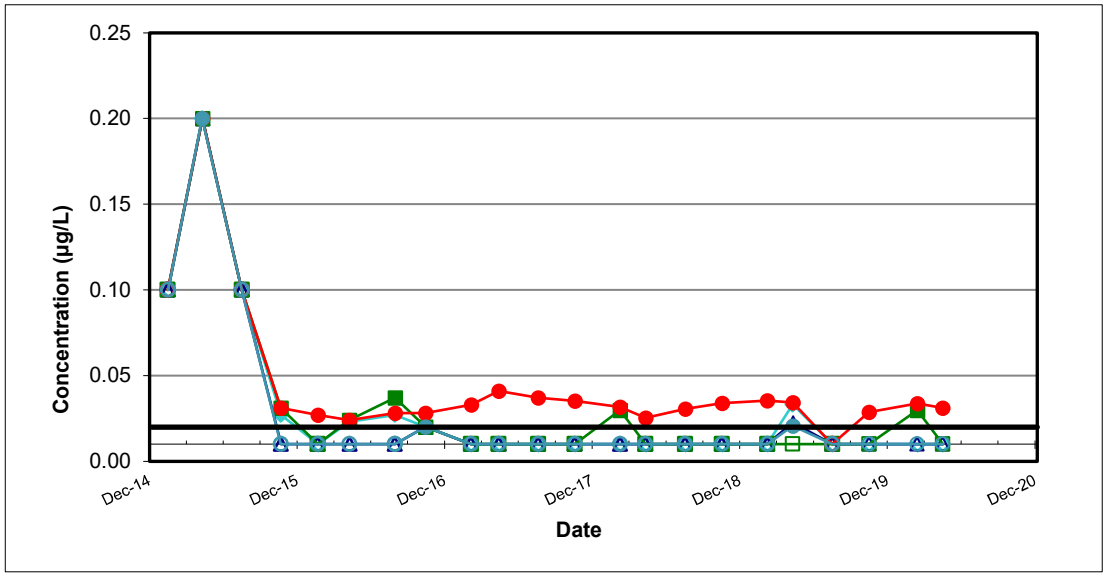
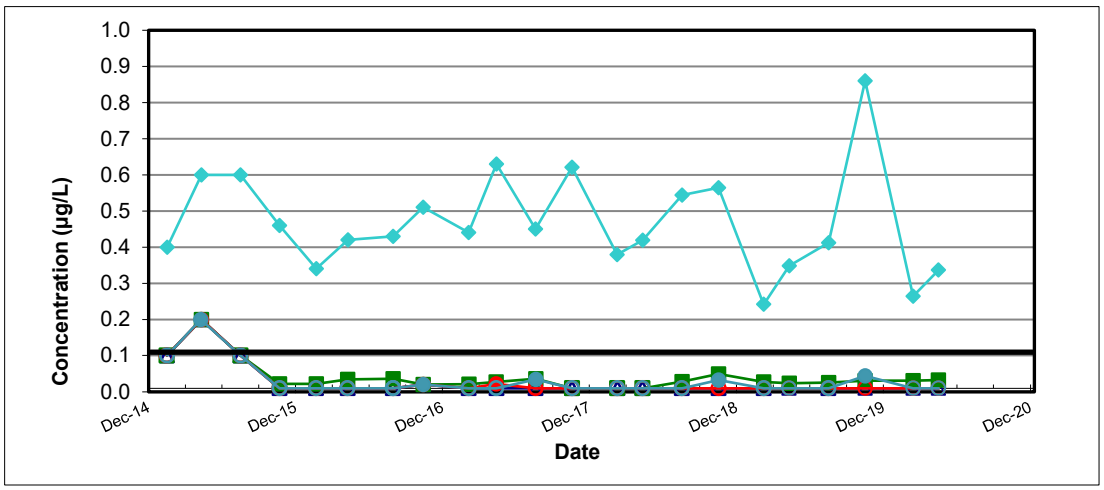


cis-1,2-Dichloroethene



Trichloroethene

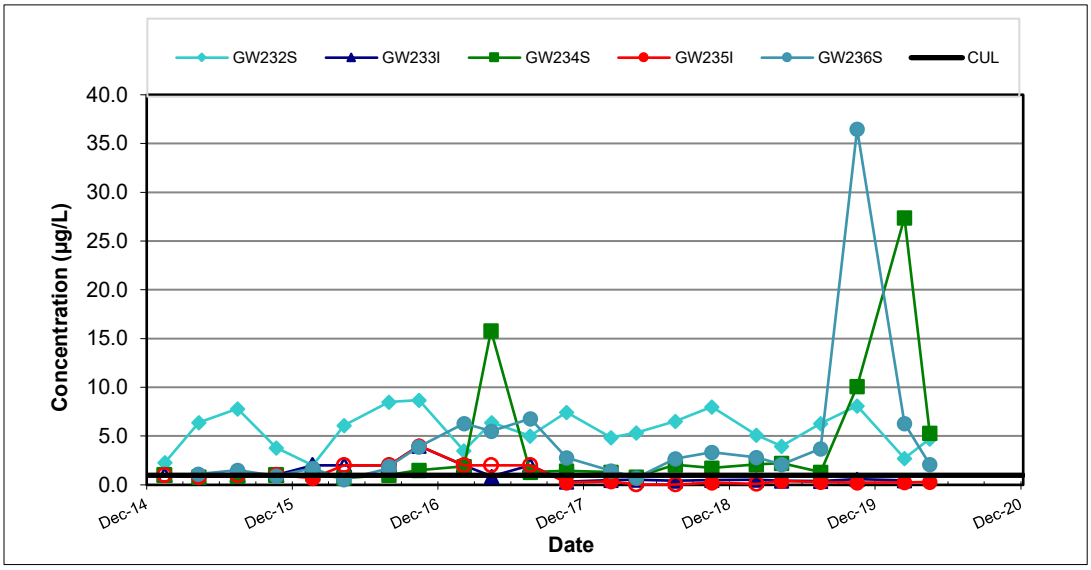


Vinyl Chloride

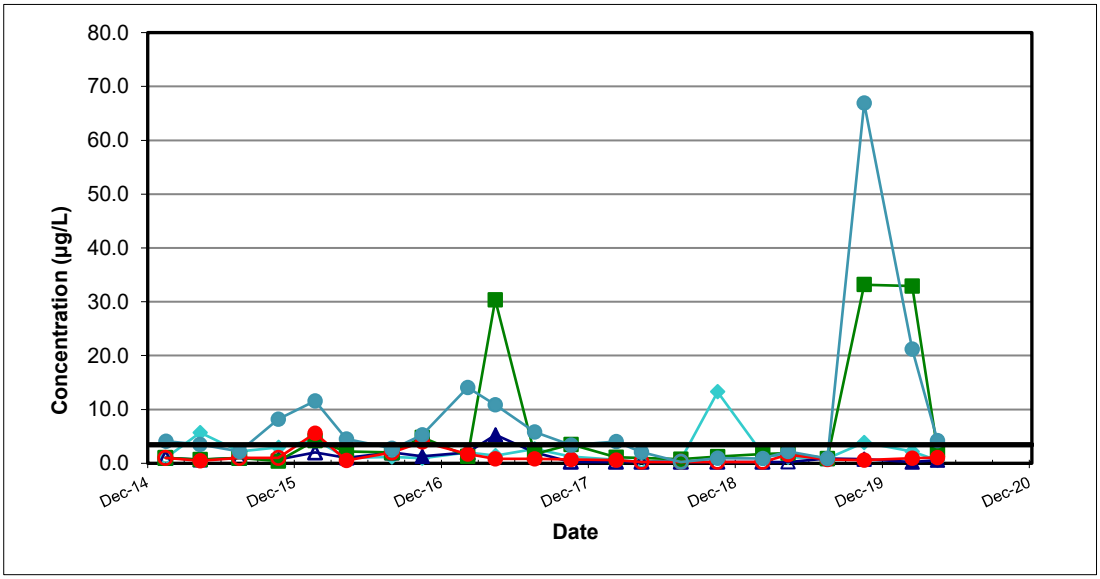
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	SWMU-172 AND SWMU-174 TREND PLOTS FOR CIS-1,2-DICHLROETHENE, TRICHLOROETHENE, AND VINYL CHLORIDE IN CPOC AREA WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 6

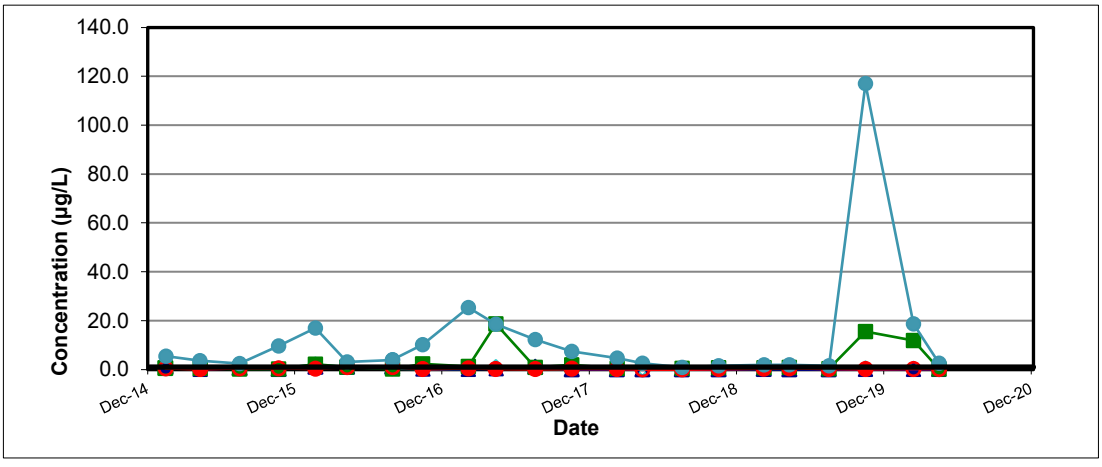
\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 2 to 6_ SWMU_172-174 Trend Plots.xlsx



Arsenic



Copper

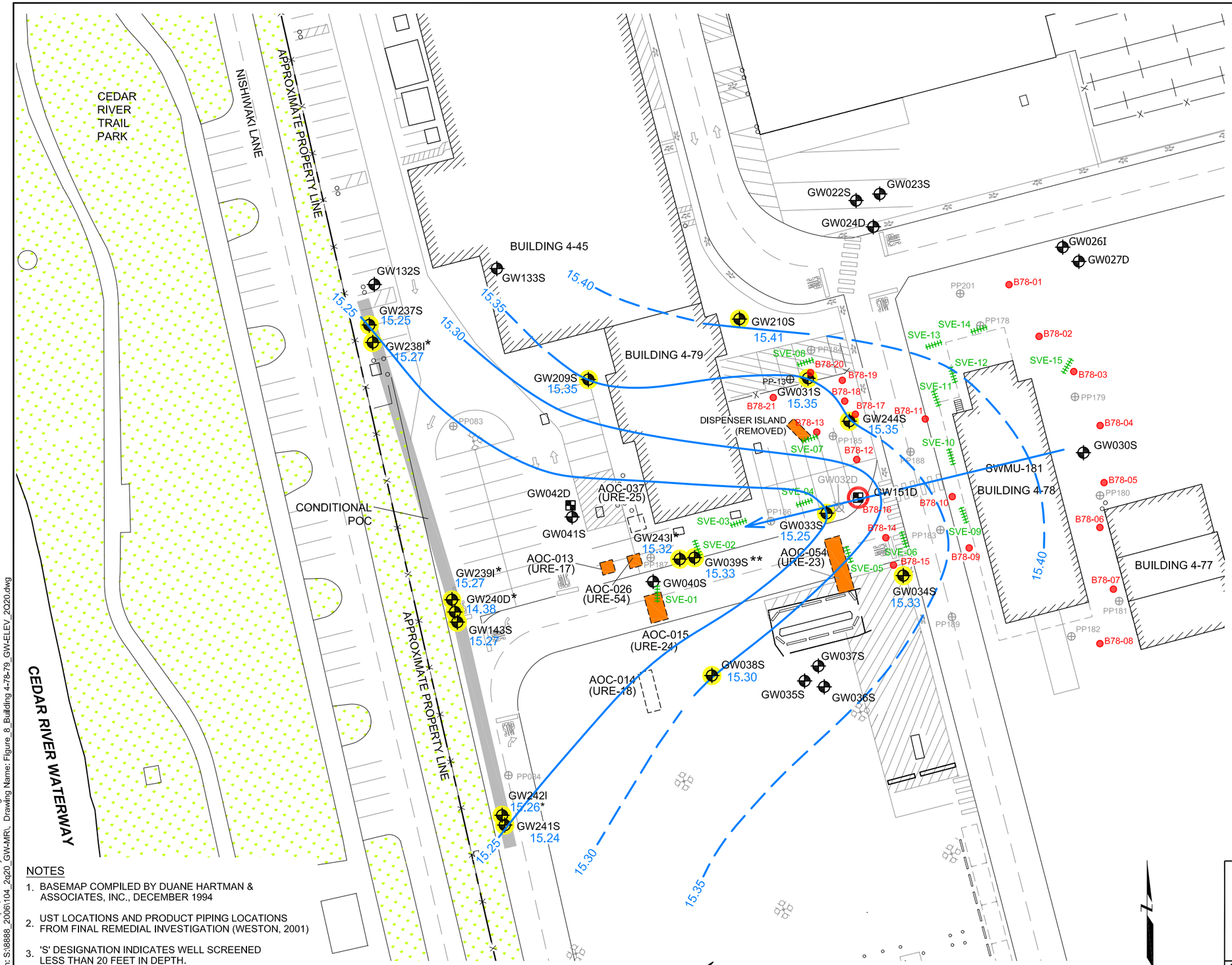


Lead

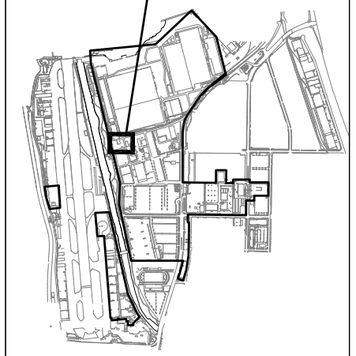
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	SWMU-172 AND SWMU-174 TREND PLOTS FOR ARSENIC, COPPER AND LEAD IN CPOC AREA WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 7

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 2 to 6_ SWMU_172-174 Trend Plots.xlsx



4-78/79 SWMU/AOC GROUP LOCATION MAP



BOEING RENTON FACILITY MAP

LEGEND

GW033S 15.25 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)

* WELL SCREENED IN UPPER AND LOWER PORTION OF AQUIFER, SO WATER LEVEL IS NOT USED FOR CONTOURING.

** WATER LEVEL IS ANOMALOUS, NOT USED FOR CONTOURING.

GW042D — EXTRACTION WELL

GW032D — ABANDONED MONITORING WELL

SVE-15 — HORIZONTAL SVE WELL

B78-12 — BIOREMEDIATION INJECTION WELL

EXTRACTION WELL CONVERTED TO INJECTION WELL

PP083 — PUSH-PROBE SAMPLE LOCATION

FENCE

APPROXIMATE FUEL AND NON-CHLORINATED VOC SOURCE AREAS

REMOVED UST (WESTON, 2001)

CONDITIONAL POINT OF COMPLIANCE

HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

NOTES

1. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994
2. UST LOCATIONS AND PRODUCT PIPING LOCATIONS FROM FINAL REMEDIAL INVESTIGATION (WESTON, 2001)
3. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 20 FEET IN DEPTH.
   'I' DESIGNATION INDICATES WELL SCREENED BETWEEN 20 AND 25 FEET IN DEPTH.
   'D' DESIGNATION INDICATES WELL SCREENED GREATER THAN 25 FEET IN DEPTH.

0 25 50
APPROXIMATE SCALE IN FEET

BUILDING 4-78/79 SWMU/AOC GROUP MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS MAY 12, 2020

Boeing Renton Facility
Renton, Washington

By: APS	Date: 07/27/20	Project No. PS20203450
wood.		Figure 8

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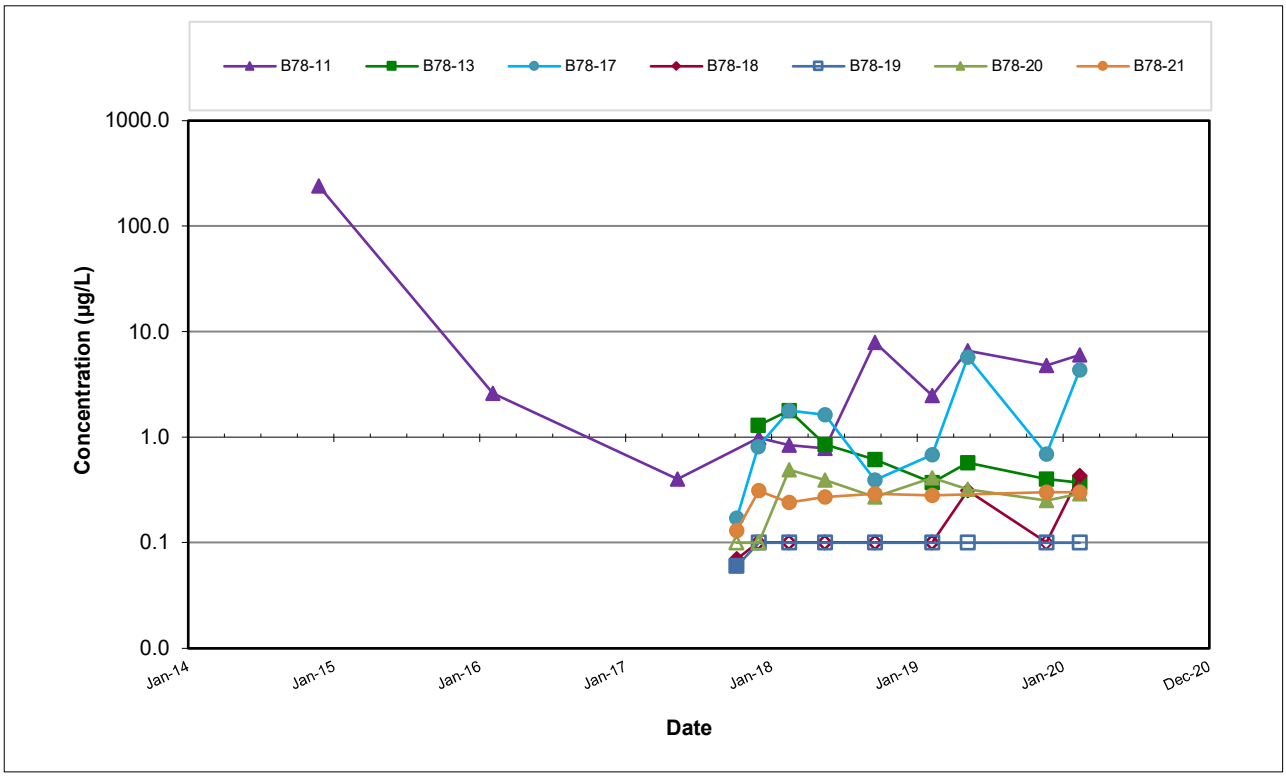
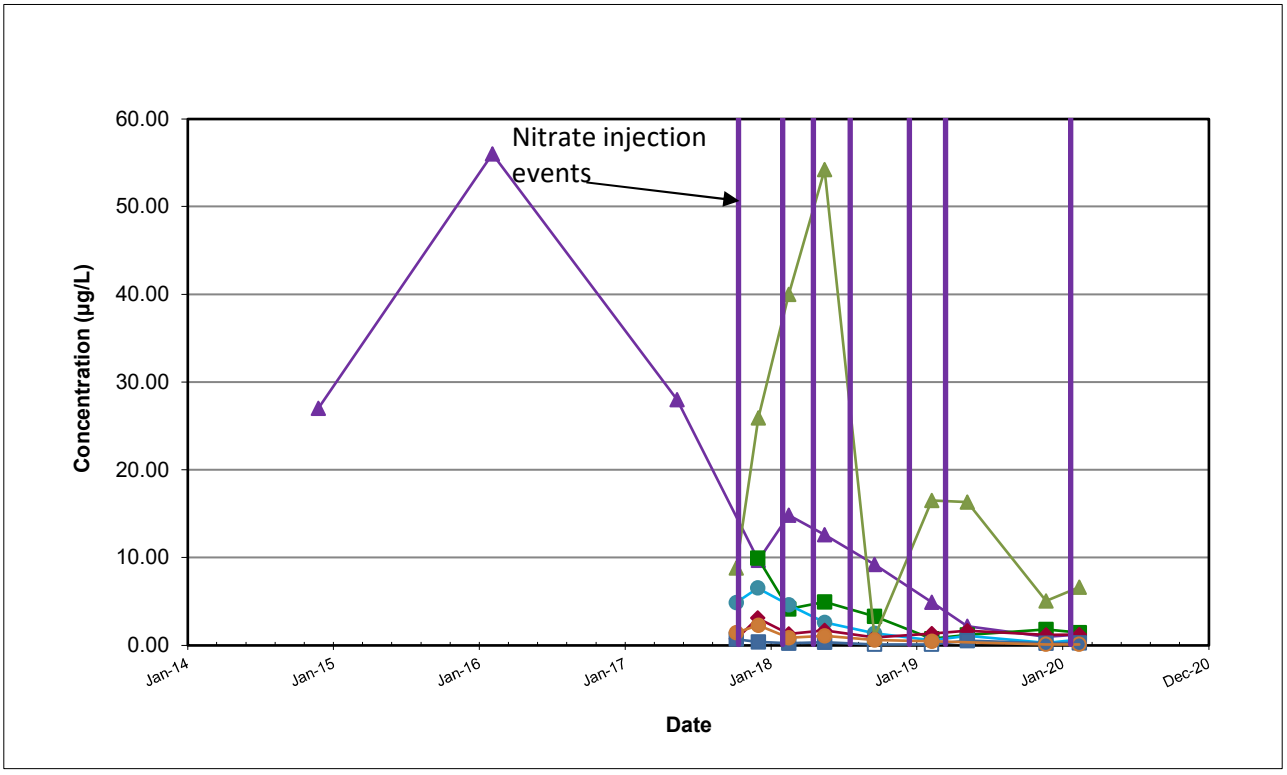


cis-1,2-Dichloroethene

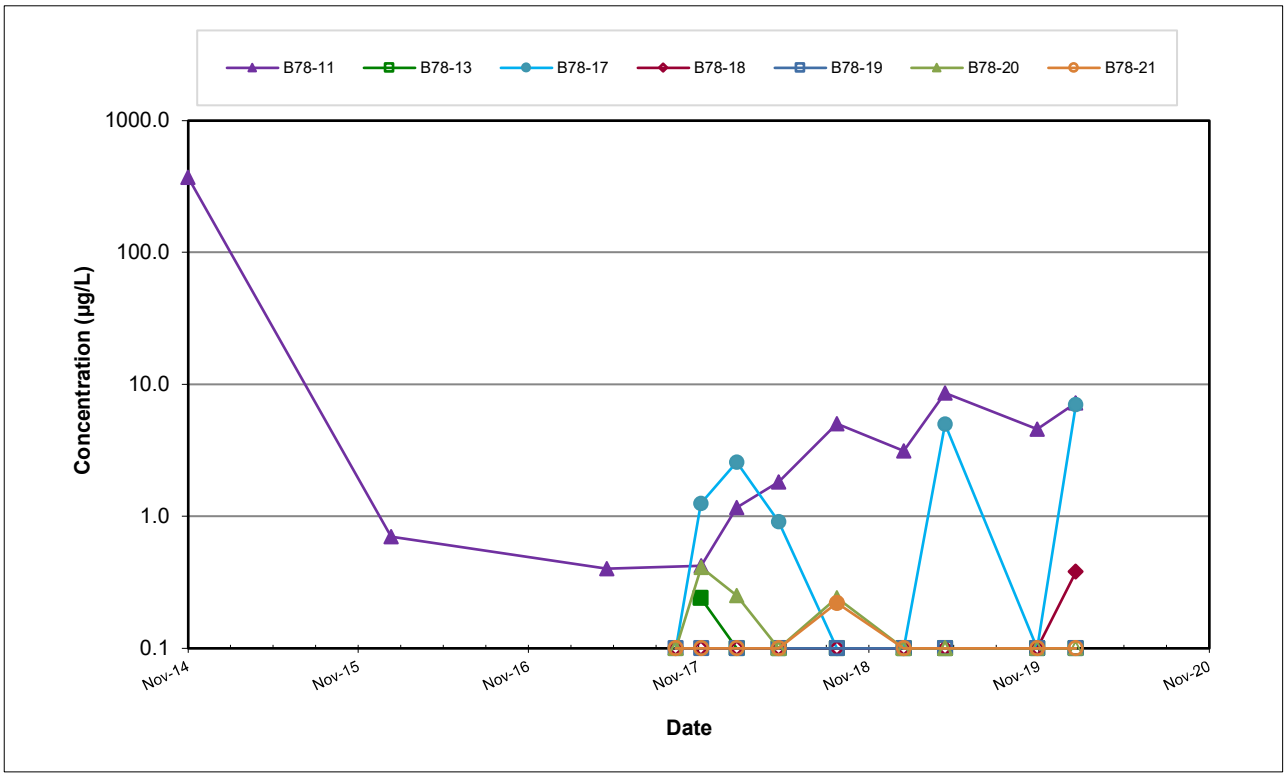


Benzene

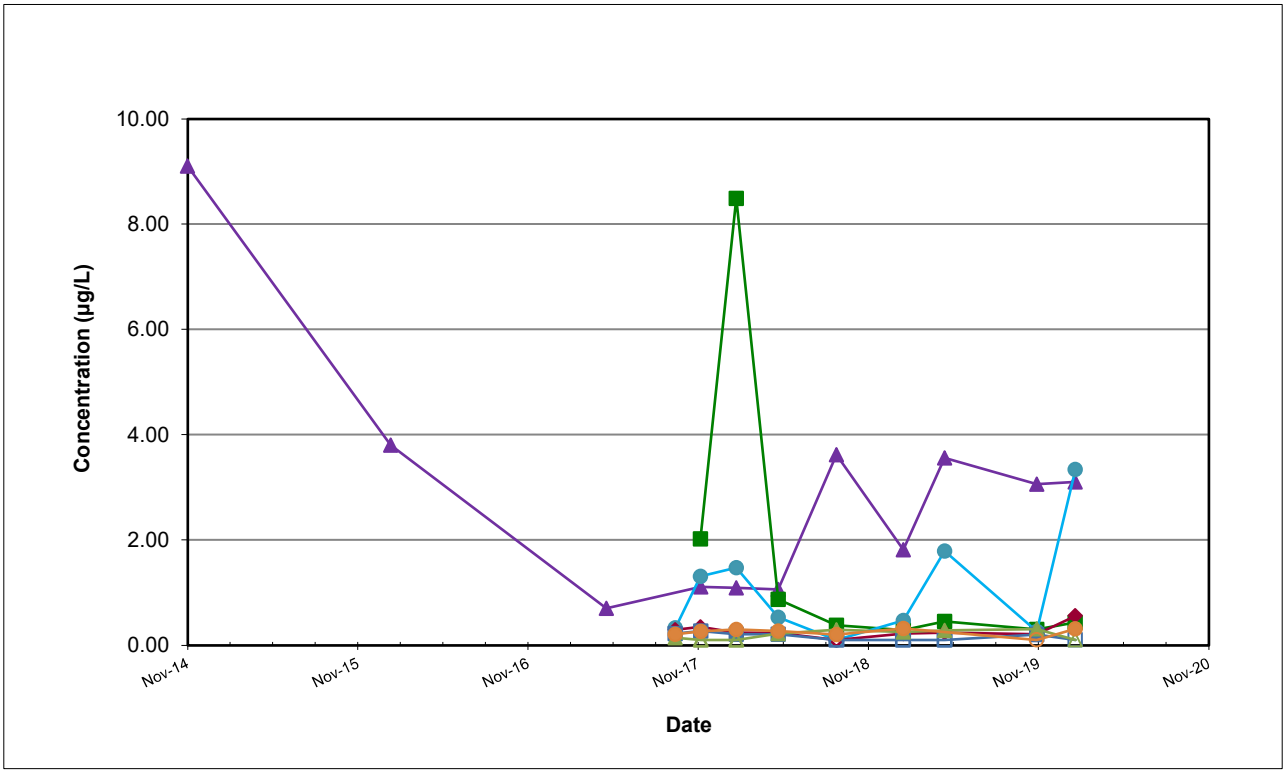
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR CIS-1,2-DICHLOROETHENE AND BENZENE IN INJECTION WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 9

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 8 to 14_ Bldg 4-78-79 Trend Plots.xlsx



Trichloroethene

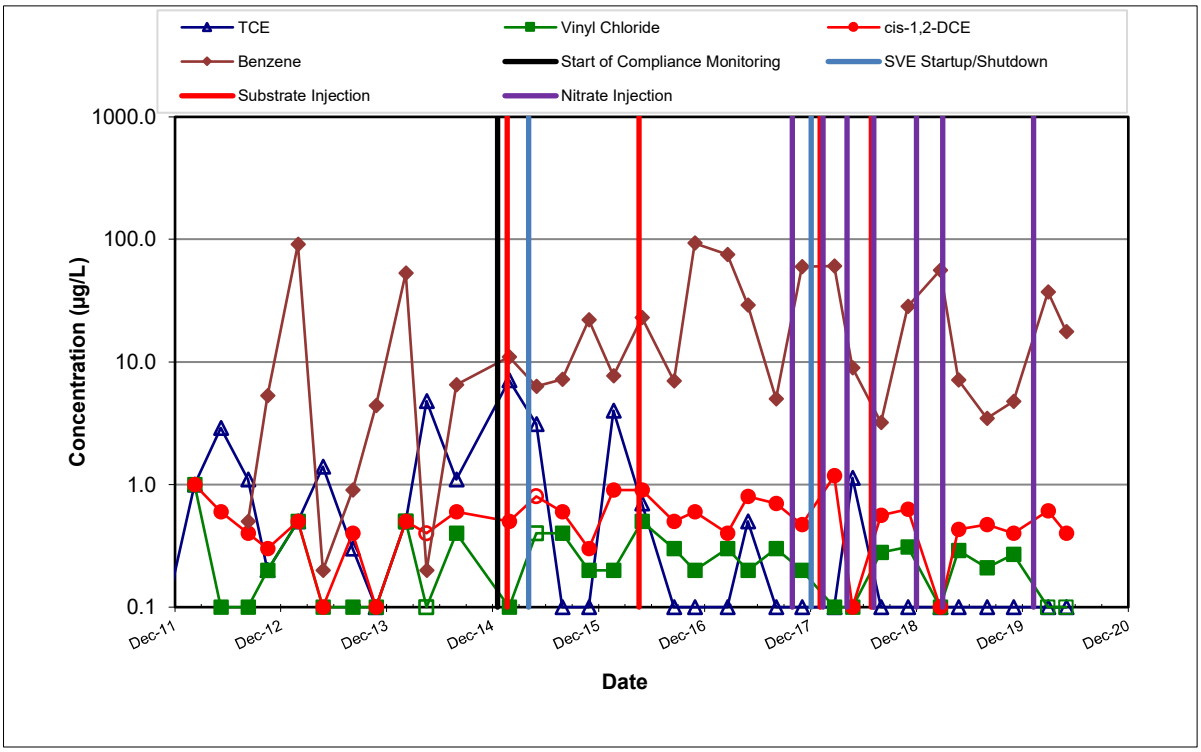


Vinyl Chloride

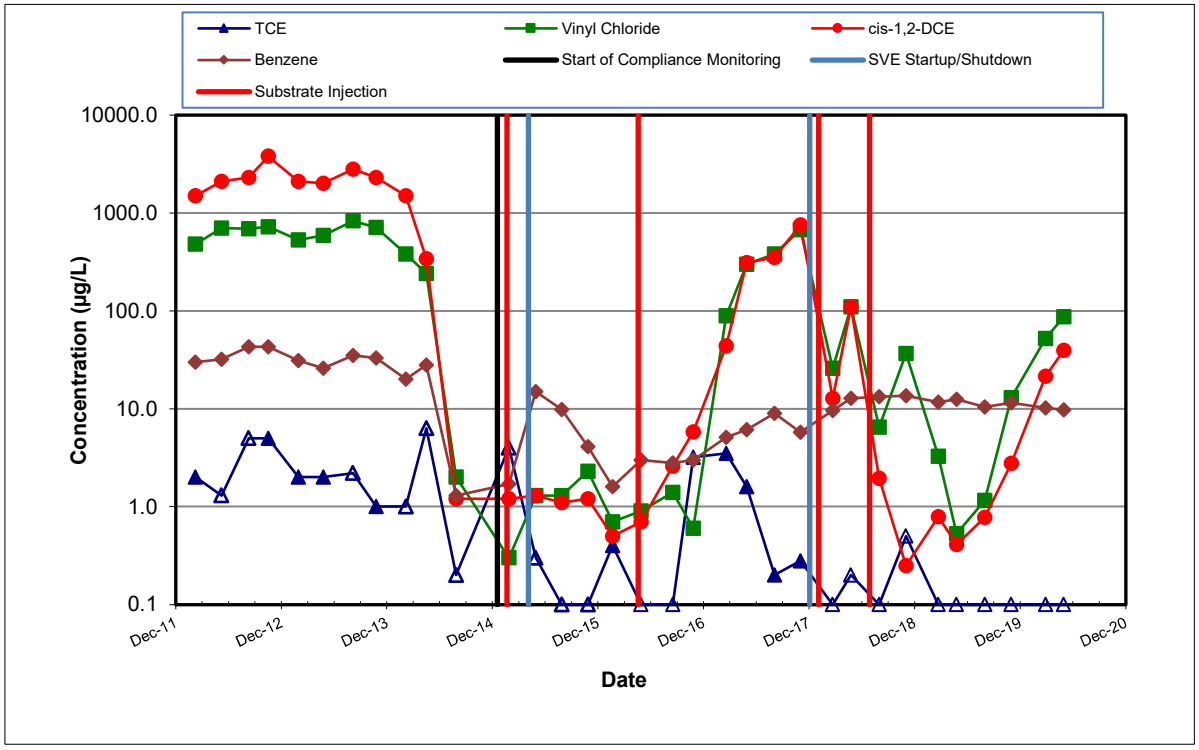
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR TRICHLOROETHENE AND VINYL CHLORIDE IN INJECTION WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 10

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 8 to 14_ Bldg 4-78-79 Trend Plots.xlsx



SOURCE AREA WELL GW031S



SOURCE AREA WELL GW033S

Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

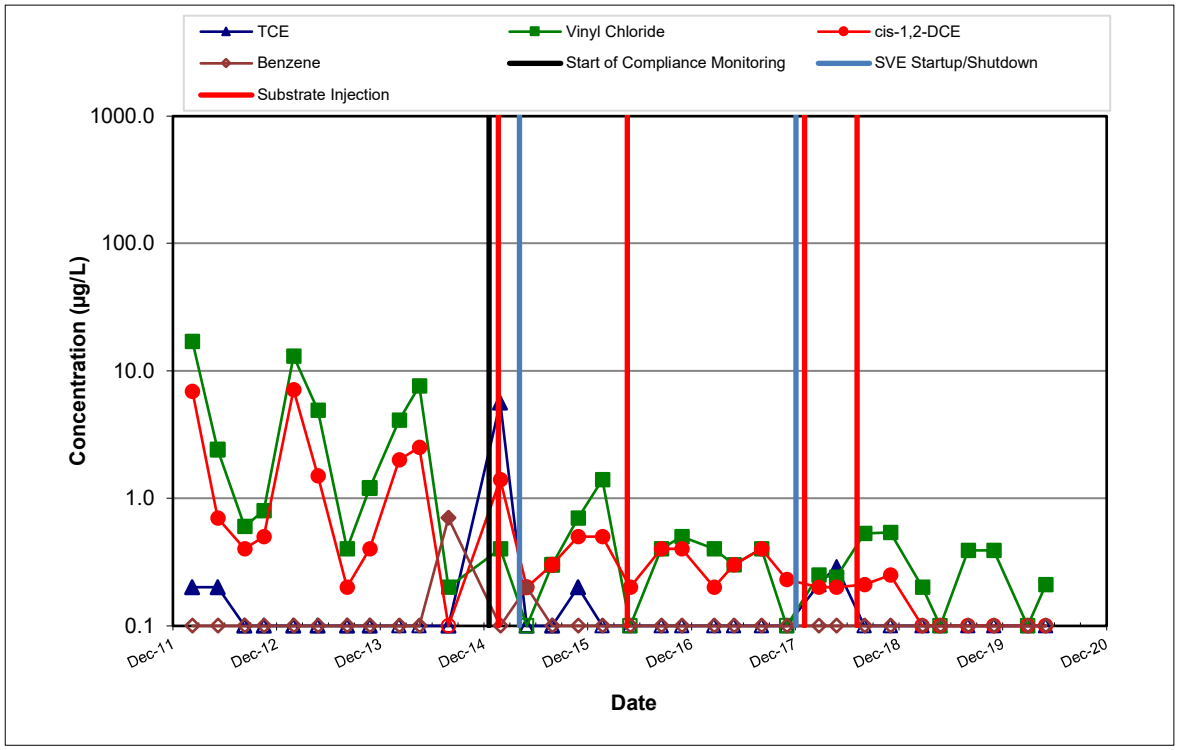
wood.

BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS
FOR SOURCE AREA WELLS GW031S AND GW033S
Boeing Renton Facility
Renton, Washington

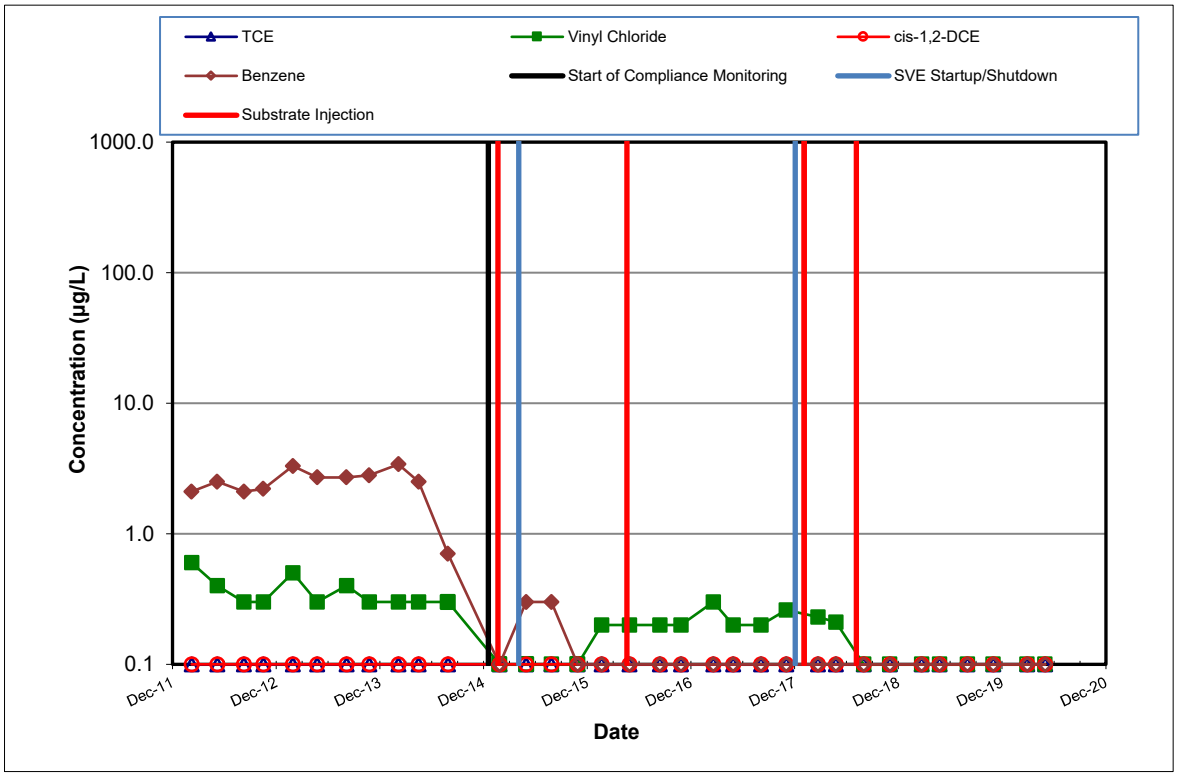
Project

Figure
11

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 8 to 14_ Bldg 4-78-79 Trend Plots.xlsx



SOURCE AREA WELL GW034S

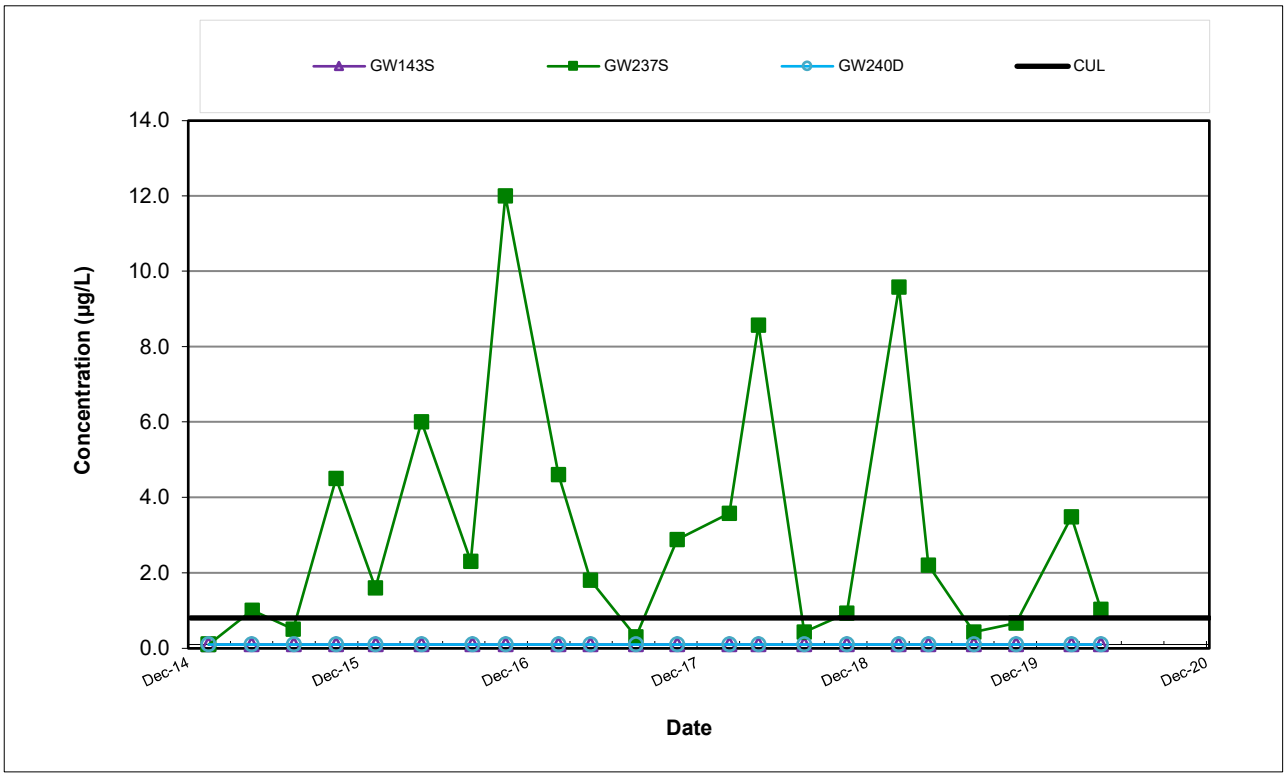


DOWNGRADIENT PLUME AREA WELL GW209S

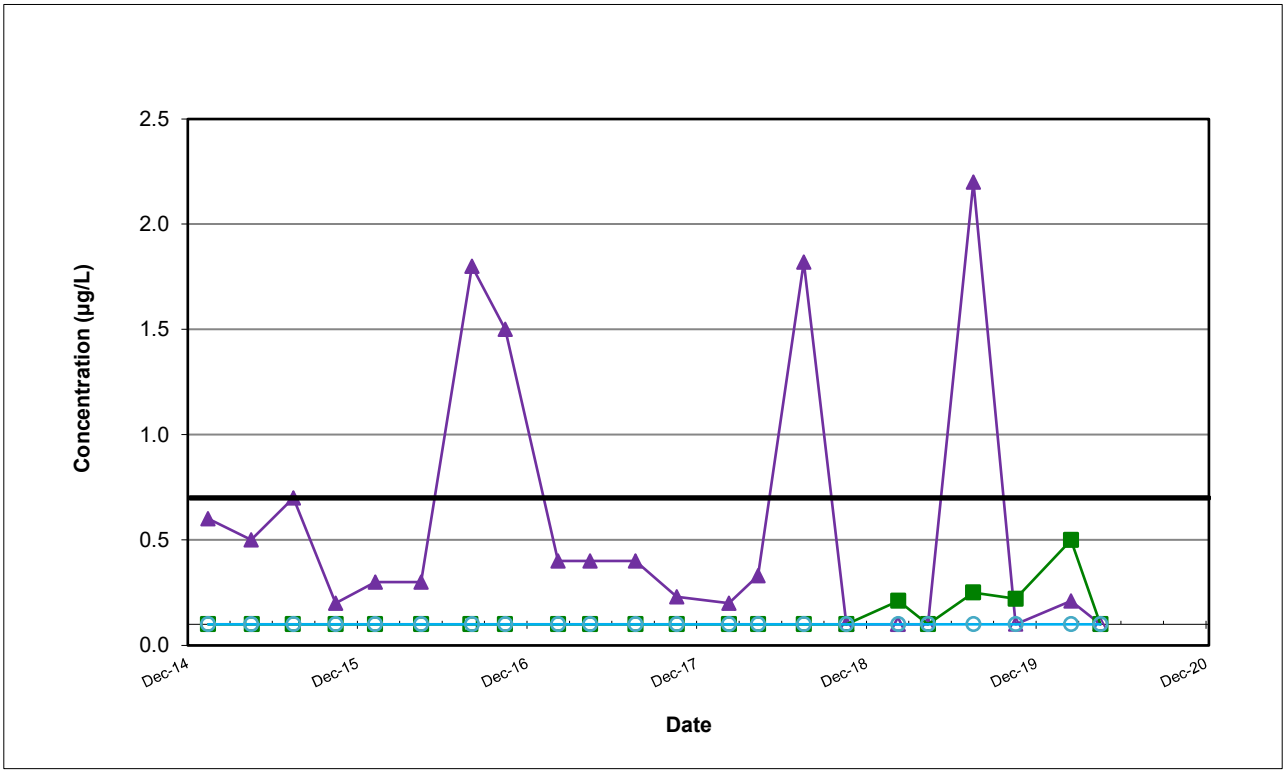
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	BLDG 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR SOURCE AREA WELL GW034S AND DOWNGRADIENT PLUME AREA WELL GW209S Boeing Renton Facility	Project No. Figure 12

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 8 to 14_ Bldg 4-78-79 Trend Plots.xlsx



Benzene

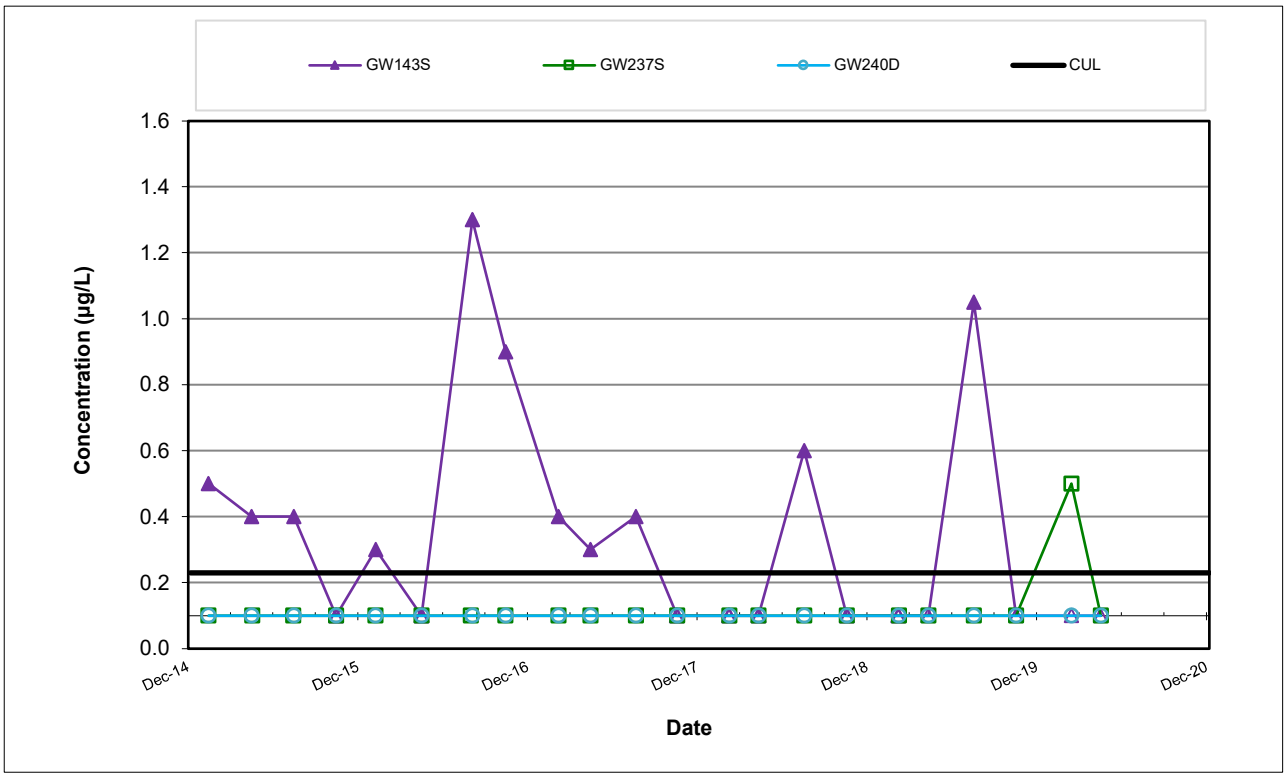


cis-1,2-Dichloroethene

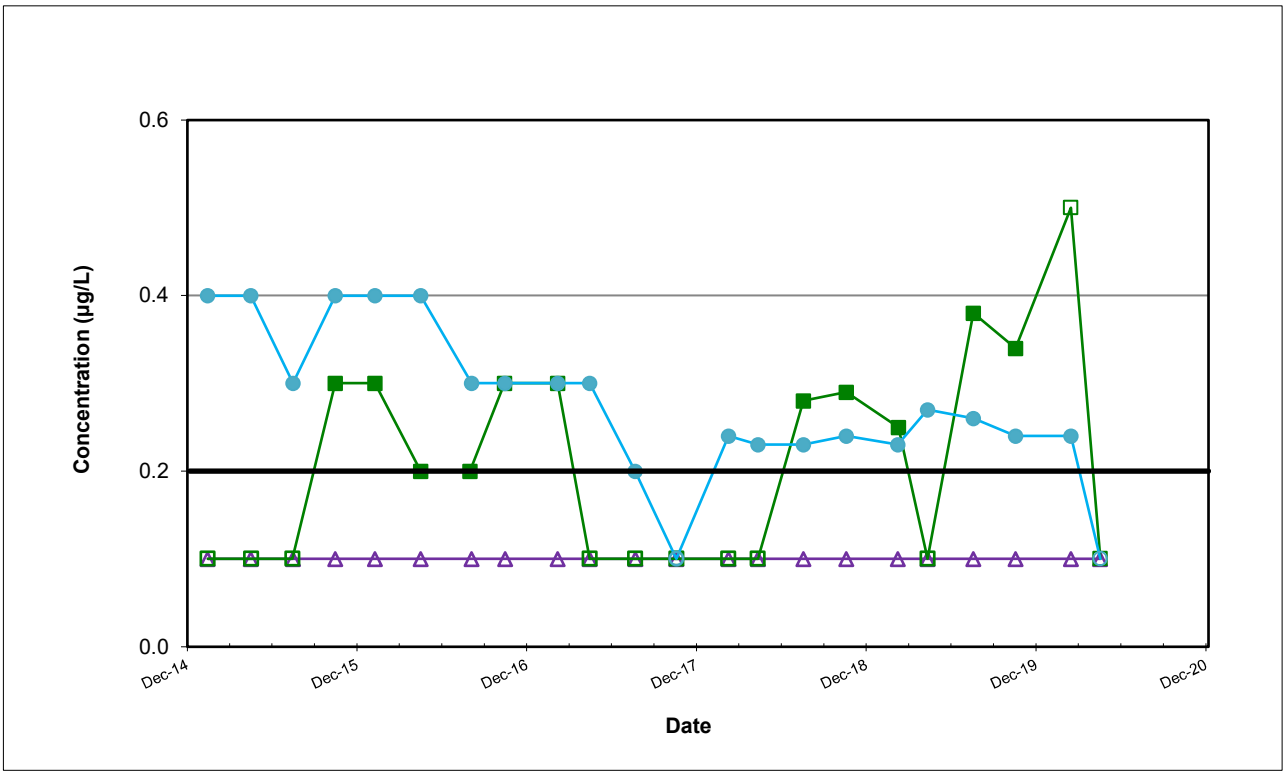
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR BENZENE AND CIS-1,2-DICHLOROETHENE IN CPOC AREA WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 13

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 8 to 14_ Bldg 4-78-79 Trend Plots.xlsx



Trichloroethene

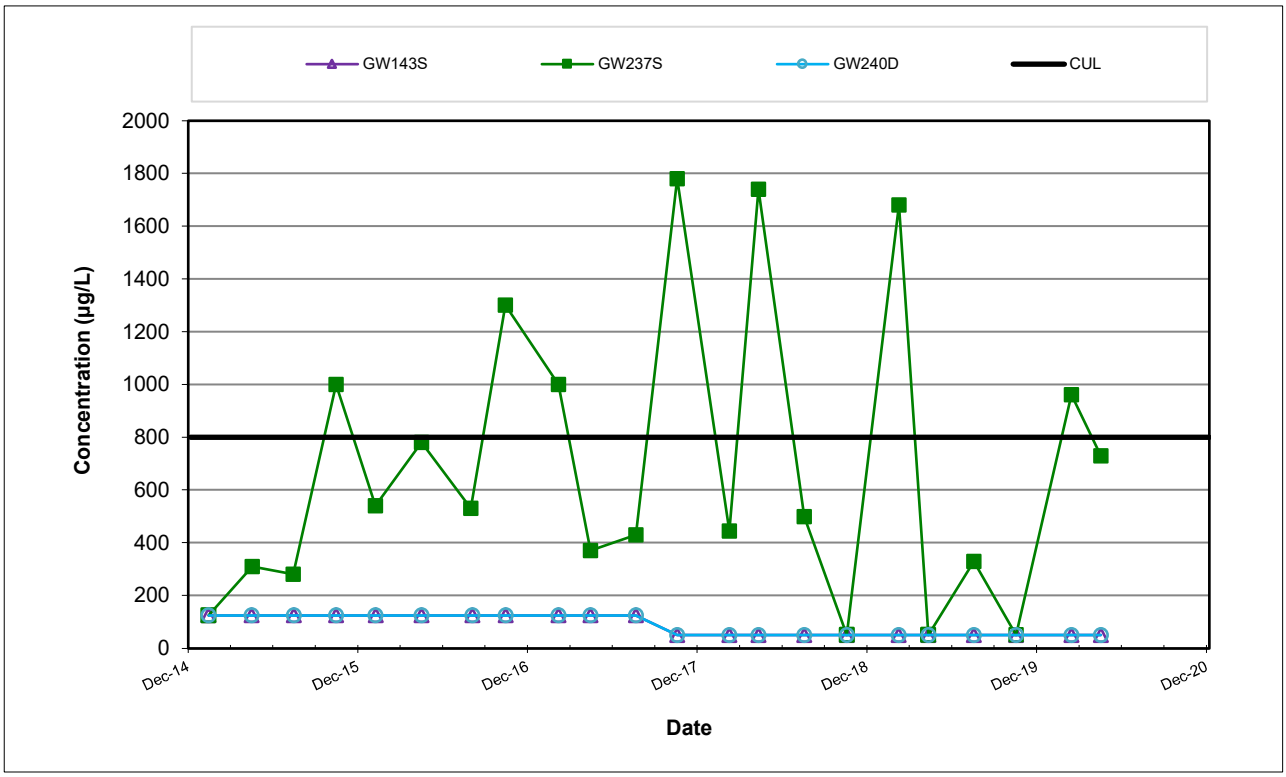


Vinyl Chloride

Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR TRICHLOROETHENE AND VINYL CHLORIDE IN CPOC AREA WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 14

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 8 to 14_ Bldg 4-78-79 Trend Plots.xlsx

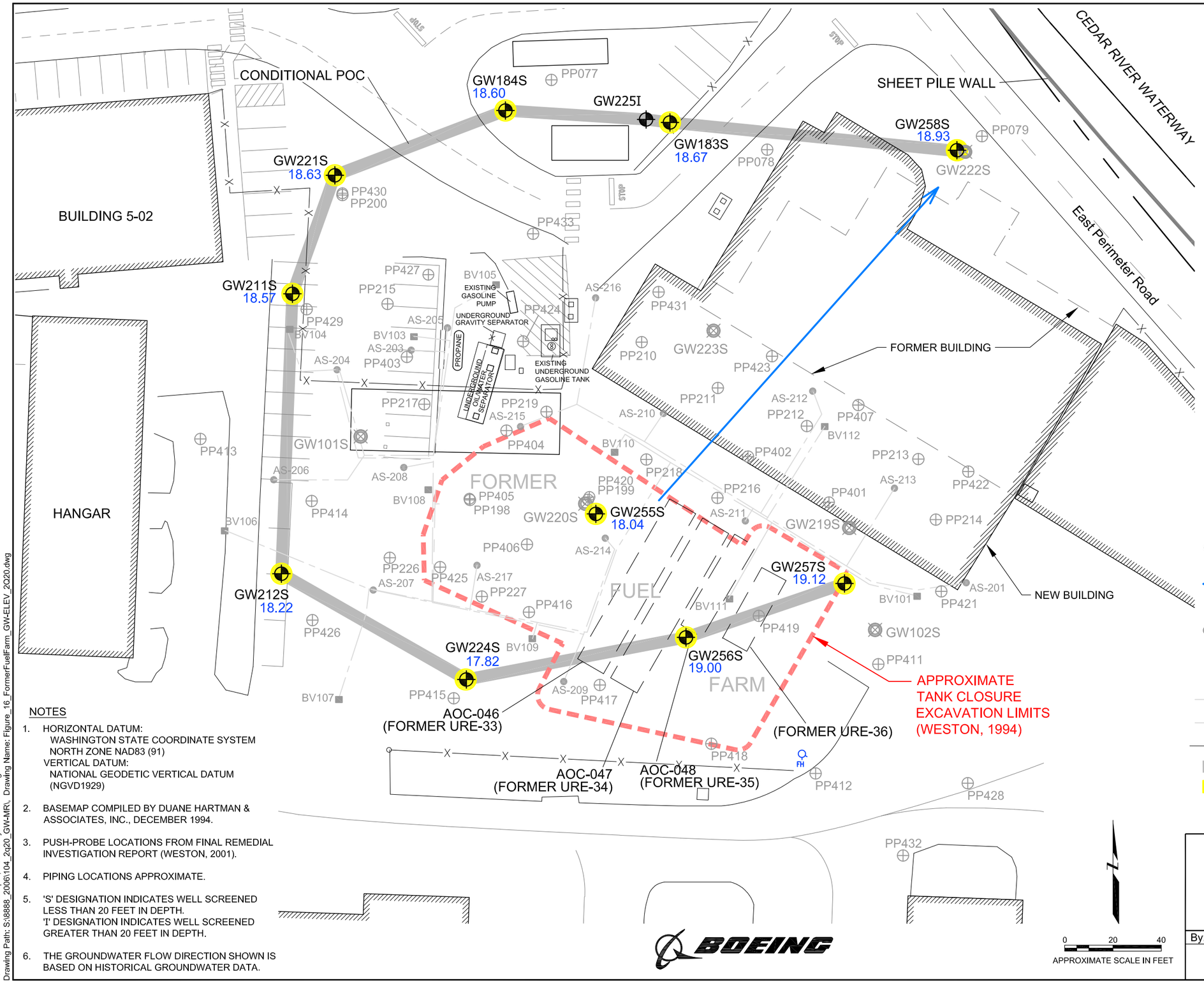


TPH as Gasoline

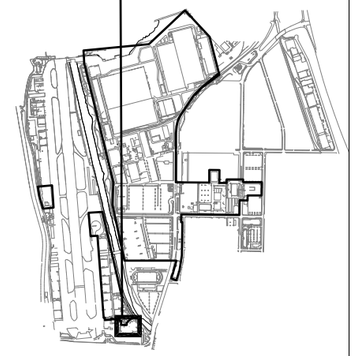
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol.

wood.	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR TPH AS GASOLINE IN CPOC AREA WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 15

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figures 8 to 14_ Bldg 4-78-79 Trend Plots.xlsx



FORMER FUEL FARM AOC GROUP LOCATION MAP



BOEING RENTON FACILITY MAP

LEGEND

- GW184S 18.60 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- GENERAL DIRECTION OF GROUNDWATER FLOW
- PP042 — PUSH PROBE LOCATION
- GW222S — ABANDONED GROUNDWATER MONITORING WELL
- AS-204 — FORMER UNDERGROUND AIR SPARGING WELL
- BV112 — FORMER UNDERGROUND BIOVENTING WELL
- FORMER UNDERGROUND BIOVENTING LINE
- FORMER UNDERGROUND AIR SPARGING LINE
- FENCE
- CONDITIONAL POINT OF COMPLIANCE
- HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

NOTES

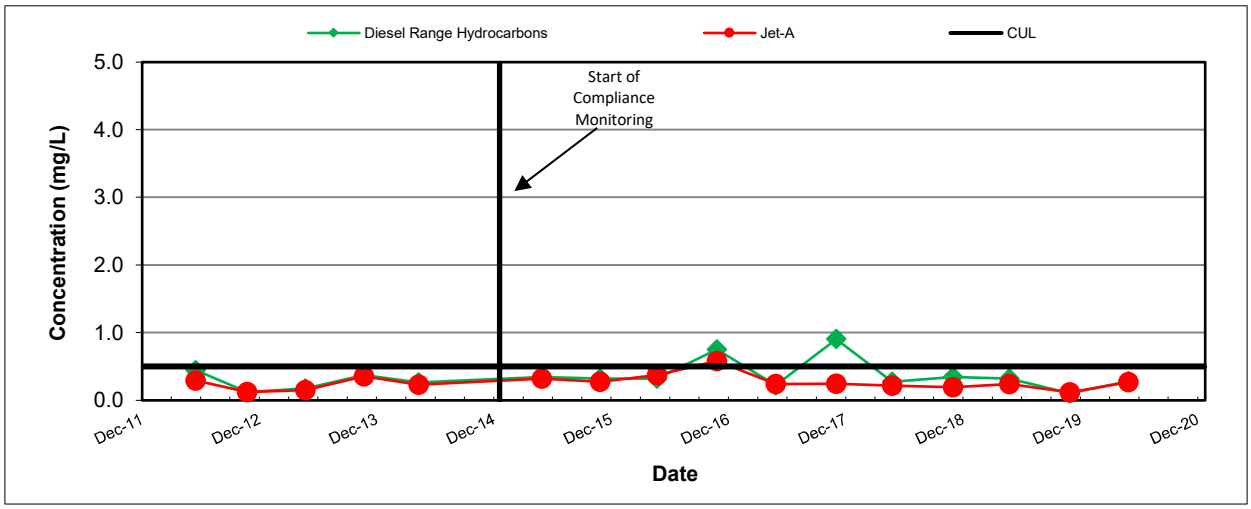
1. HORIZONTAL DATUM:
   WASHINGTON STATE COORDINATE SYSTEM
   NORTH ZONE NAD83 (91)
   VERTICAL DATUM:
   NATIONAL GEODETIC VERTICAL DATUM
   (NGVD1929)
2. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994.
3. PUSH-PROBE LOCATIONS FROM FINAL REMEDIAL INVESTIGATION REPORT (WESTON, 2001).
4. PIPING LOCATIONS APPROXIMATE.
5. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 20 FEET IN DEPTH.
   'I' DESIGNATION INDICATES WELL SCREENED GREATER THAN 20 FEET IN DEPTH.
6. THE GROUNDWATER FLOW DIRECTION SHOWN IS BASED ON HISTORICAL GROUNDWATER DATA.

0 20 40
APPROXIMATE SCALE IN FEET

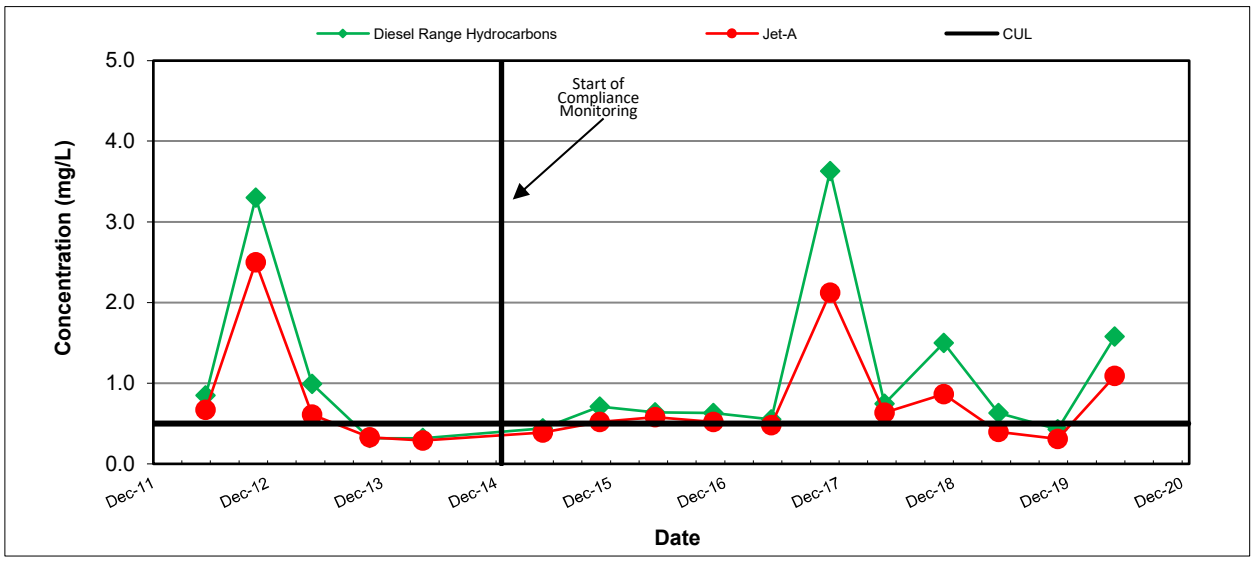
FORMER FUEL FARM AOC GROUP MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS MAY 11, 2020 Boeing Renton Facility Renton, Washington

By: APS	Date: 08/06/20	Project No. 8888
wood.		Figure 16

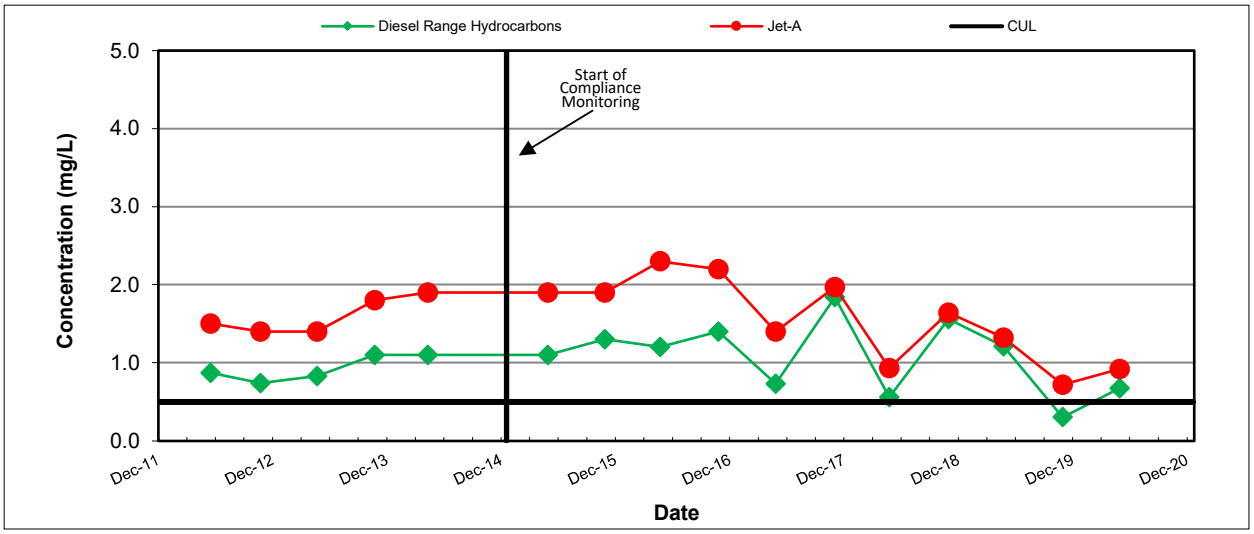
Plot Date: 08/06/20 - 3:03pm, Plotted by: adam.stenberg
Drawing Path: S:\8888_20061\04_2q20_GW-MR\, Drawing Name: Figure_16_FormerFuelFarm_GW-ELEV_2Q20.dwg



CPOC WELL GW211S



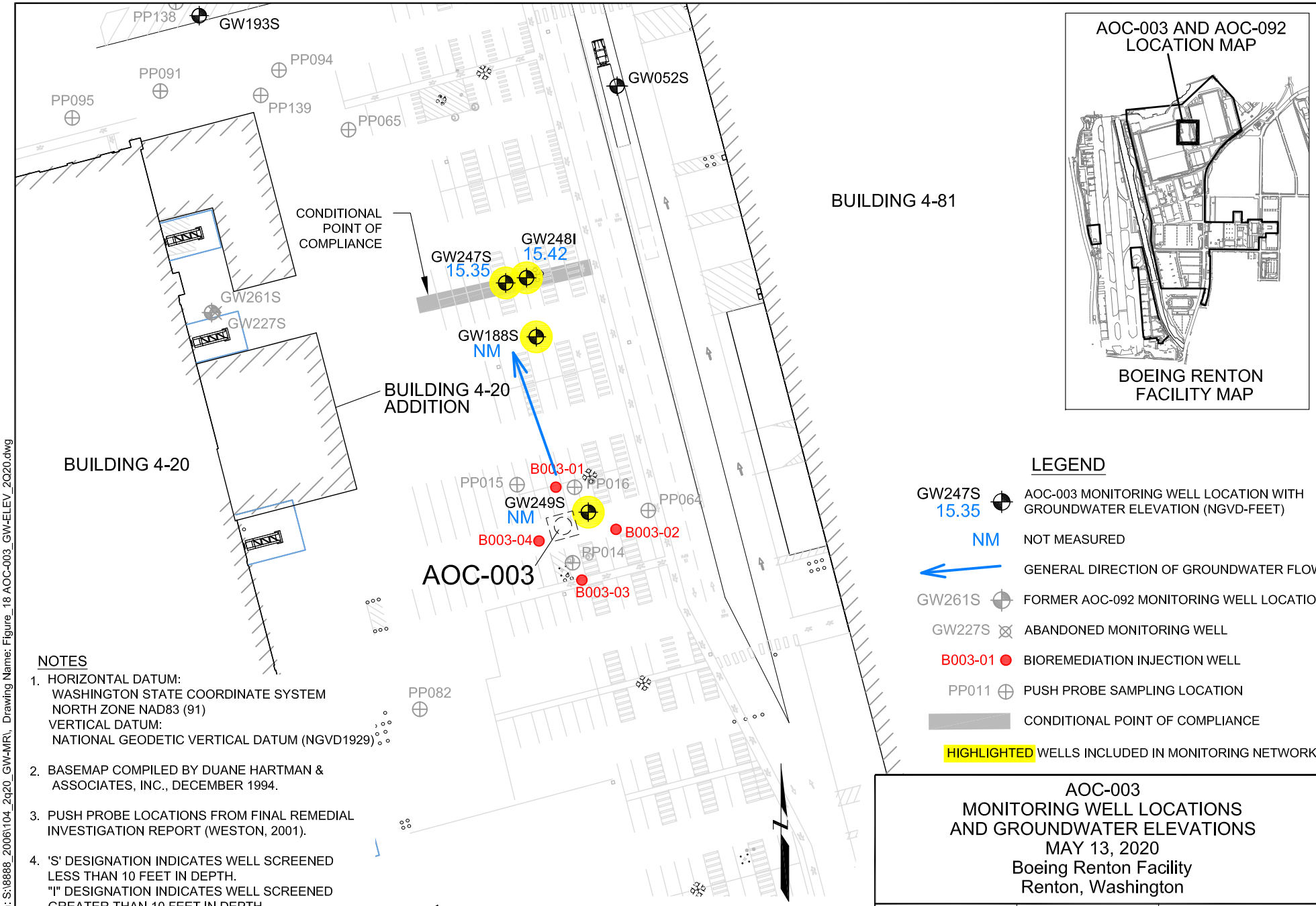
CPOC WELL GW221S



CPOC WELL GW224S

\\sea2-fs1\projects\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\excel\Figure 16_FFF CPOC trend plot.xls

wood.	FORMER FUEL FARM AOC GROUP TREND PLOTS FOR CPOC AREA WELLS GW211S, GW221S, AND GW224S Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 17



NOTES

1. HORIZONTAL DATUM:
   WASHINGTON STATE COORDINATE SYSTEM
   NORTH ZONE NAD83 (91)
   VERTICAL DATUM:
   NATIONAL GEODETIC VERTICAL DATUM (NGVD1929)
2. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994.
3. PUSH PROBE LOCATIONS FROM FINAL REMEDIAL INVESTIGATION REPORT (WESTON, 2001).
4. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 10 FEET IN DEPTH.
   "I" DESIGNATION INDICATES WELL SCREENED GREATER THAN 10 FEET IN DEPTH.
5. THE GROUNDWATER FLOW DIRECTION SHOWN IS BASED ON HISTORICAL GROUNDWATER DATA.

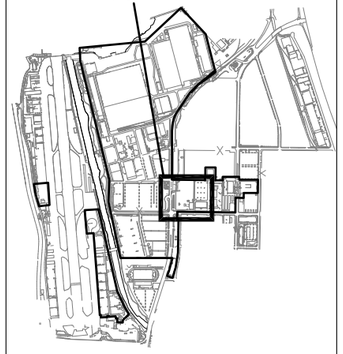
BOEING

AOC-003 MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS MAY 13, 2020 Boeing Renton Facility Renton, Washington

By: MDS	Date: 08/06/20	Project No. PS20203450
wood.		Figure 18

Plot Date: 08/06/20 - 3:48pm, Plotted by: adam.stenberg
Drawing Path: S:\8888_2006\104_2q20_GW-MR\, Drawing Name: Figure_18 AOC-003_GW-ELEV_2Q20.dwg

FORMER BUILDING 10-71 LOCATION MAP



BOEING RENTON FACILITY MAP

FORMER BUILDING 10-71 (DEMOLISHED)

MULTI-LEVEL PARKING GARAGE

10-71-MW4 20.71

10-71-MW3 NM

10-71-MW2 21.41

10-71-MW1 21.83

BUILDING 10-20

FORMER BUILDING 10-72

LOGAN AVE N

N 6TH ST

PAVED PARKING

LEGEND

10-71-MW4 20.71	MONITORING WELL LOCATION GROUNDWATER ELEVATION (NGVD-FT)
NM	NOT MEASURED
	GENERAL DIRECTION OF GROUNDWATER FLOW
10-71-MW2	ELECTRON DONOR INJECTION WELL AND MONITORING WELL LOCATION
	APPROXIMATE PROPERTY LINE
X	FENCE
HIGHLIGHTED	WELLS INCLUDED IN MONITORING NETWORK

NOTES

1. HORIZONTAL DATUM:
   WASHINGTON STATE COORDINATE SYSTEM
   NORTH ZONE NAD83 (91)
   VERTICAL DATUM:
   NATIONAL GEODETIC VERTICAL DATUM (NGVD1929)
2. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994.

0 40 80

APPROXIMATE SCALE IN FEET

BOEING

LOT 20 / FORMER BUILDING 10-71 AREA MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS MAY 12, 2020 Boeing Renton Facility Renton, Washington

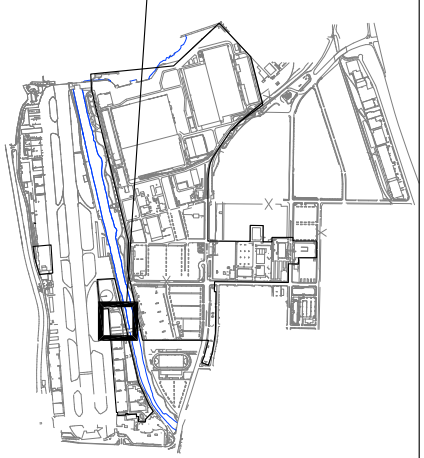
By: MDS	Date: 08/12/20	Project No. PS20203450
wood.		Figure 19

Plot Date: 08/12/20 - 3:47pm, Plotted by: adam.stenberg
Drawing Path: S:\8888_2006\104_2q20_GW-MR\, Drawing Name: Figure_19_FormerBldg10-71_2Q20.dwg

Plot Date: 08/12/20 - 3:54pm, Plotted by: adam.stenberg
Drawing Path: S:\8888_2006\104_2q20_GW-MR\, Drawing Name: Figure_20_APRON A_GW-ELEV_2Q20.dwg

B-4
B-3
B-6
SHED
SHED
SHED
SHED
SHED
CB
CEDAR RIVER WATERWAY
EAST PERIMETER ROAD
B-10
B-12
B-2
B-9
B-8
SHED
B-17
B-7
CB
B-1
B-16
BUILDING
B-13
B-15
B-14
GW262S
4.71' DTW
GW265S
GW264S
4.22' DTW
GW263S
6.28 DTW
APPROXIMATE AREA
OF TRENCH INJECTION

APRON A
LOCATION MAP



BOEING RENTON
FACILITY MAP

LEGEND

GW264S
4.22' DTW — MONITORING WELL LOCATION WITH DEPTH TO WATER (BGS IN FEET)

GENERAL DIRECTION OF GROUNDWATER FLOW

B-1 — SOIL SAMPLE LOCATION

APPROXIMATE PROPERTY LINE

FENCE

HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

N

0 20 40
APPROXIMATE SCALE IN FEET

BOEING

APRON A AREA
MONITORING WELL LOCATIONS AND DEPTH TO GROUNDWATER
MAY 12, 2020
Boeing Renton Facility
Renton, Washington

By: MDS	Date: 08/12/20	Project No. PS20203450
wood.		Figure 20

Tables

TABLE 1: FUTURE SAMPLING SCHEDULE

Boeing Renton Facility, Renton, Washington

Cleanup Action Area	Frequency as [1]		Source Area Wells	Downgradient Plume Wells	CPOC Wells	Constituents of Concern	Analyses[2]
	Quarterly	Semiannual					
SWMU-168		X (3)	GW228S[3]	NA	GW230I	VC	SW8260C SIM
SWMU-172/SWMU-174		X	GW152S and GW153S	GW172S, GW173S, and GW226S	GW232S, GW234S, GW235I, and GW236S	cis -1,2-DCE, PCE, TCE, VC Arsenic, copper, and lead	SW8260C SIM EPA 6020A
Building 4-78/79 SWMU/AOC Group		X	GW031S, GW033S, GW034S, and GW244S		GW143S, GW237S, GW240D	VC, TCE, cis-1,2-DCE, benzene TPH-gasoline	SW8260C NWTPH-Gx
Former Fuel Farm SWMU/AOC Group		X		NA	GW211S, GW221S, GW224S	TPH-jet fuel, TPH-diesel	NWTPH-Dx
AOC-001/AOC-0024			All wells closed with start of the Apron R construction			Benzene	SW8260C
						TCE, *cis* -1,2-DCE, 1,1-dichloroethene, VC	SW8260C SIM
AOC-003		X (all wells)	GW249S	GW188S	GW247S and GW248I	VC	SW8260C
AOC-004		X	GW250S	NA		Lead	EPA 6020A
AOC-034/AOC-0355	All sampling ended with Ecology approval (CULs met)						
AOC-92	All sampling ended with Ecology approval (CULs met)						
AOC-93	All sampling ended with Ecology approval (CULs met)						
AOC-060		X	GW009S	GW012S GW014S, GW147S	GW150S, GW253I	VC TCE, cis -1,2-DCE	SW8260C SIM
AOC-090		X	GW189S	GW176S	GW178S, GW207S, and GW208S	CVOCs and TPH at GW189S and VC at remaining wells.	SW8260C SW8260 SIM NWPTH-Gx NWTPH-Dx
Building 4-70 Area			NA	NA	NA		

TABLE 1: FUTURE SAMPLING SCHEDULE

Boeing Renton Facility, Renton, Washington

Cleanup Action Area	Frequency as [1]		Source Area Wells	Downgradient Plume Wells	CPOC Wells	Constituents of Concern	Analyses[2]
	Quarterly	Semiannual					
Lot 20/Former Building 10-71			NA	NA	NA		
Apron A		X	GW264S	NA	NA	cis -1,2-DCE and VC	SW8260C

Source: CALIBRE (2020)

Notes:

1. The EDR presents the groundwater monitoring frequency for each SWMU/AOC. For sites with semiannual monitoring frequency, specific quarters when monitoring will be conducted is indicated by 1 for quarter 1, 2 for quarter 2, etc.
2. SIM methods will be used if the cleanup level is lower than the reporting limit achieved by the conventional 8260 method. If cleanup levels become higher or if the conventional 8260 methods are updated and able to achieve reporting limits below the cleanup levels, then the conventional method rather than the SIM method will be used.
3. GW228S will not be monitored - only the CPOC wells will be monitored on a semiannual basis for SWMU-168.
4. All wells in this area (AOC-001/002) were closed with start of the Apron R construction. Replacement of selected wells planned after construction is complete.
5. All sampling at AOC-034/035 was ended with Ecology approval dated April 30, 2019. Ecology noted the cleanup standards had been attained at the AOC-034/035 conditional point of compliance and further sampling dropped.

Abbreviations:

AOC = area of concern
cis -1,2-DCE = cis -1,2 dichloroethene
COCs = constituents of concern
CPOC = conditional point of compliance
Cr = chromium
EDR = Engineering Design Report
EPA = Environmental Protection Agency
NA = not applicable
PCE = tetrachloroethene
SIM = selected ion monitoring
SWMU = solid waste management unit
TCE = trichloroethene
TPH = total petroleum hydrocarbons
VC = vinyl chloride

TABLE 2: SWMU-172 and SWMU-174 GROUP GROUNDWATER ELEVATION DATA
MAY 11, 2020
Boeing Renton Facility, Renton, Washington

Well ID[1]	Screen Interval Depth (feet bgs)	TOC Elevation (feet)[2]	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)[2]
GW081S	5 to 20[3]	25.91	7.73	18.18
GW152S	5 to 20[3]	26.98	8.51	18.47
GW153S	5 to 20[3]	27.47	8.78	18.69
GW172S	8 to 18[3]	26.44	8.54	17.90
GW173S	8 to 18[3]	26.51	8.65	17.86
GW226S	5 to 20[3]	26.86	8.39	18.47
GW232S	4 to 14	24.45	6.32	18.13
GW233I	15 to 25	24.35	5.90	18.45
GW234S	3 to 13	24.95	6.59	18.36
GW235I	15 to 25	24.90	6.39	18.51
GW236S	5 to 15	24.36	6.21	18.15

Notes
1. S = shallow well; I = intermediate well.
2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.
3. Screen intervals are approximate and based on database listings of the screen interval depths for these wells.

Abbreviations
bgs = below ground surface
TOC = top of casing

TABLE 3: SWMU-172 AND SWMU-174 GROUP CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS [1]

MAY 11, 2020

Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]											
	Source Area			Downgradient Plume Area				CPOC Area				
	GW152S	GW152S (field dup.)	GW153S	GW081S	GW172S	GW173S	GW226S	GW232S	GW233I	GW234S	GW235I	GW236S
Specific Conductivity (µS/cm)	166.6	NA	278.2	244.4	289.3	388.6	313.5	516.0	222.4	234.5	144.6	289.9
Dissolved Oxygen (mg/L)	0.36		1.86	1.79	0.12	0.45	1.99	2.61	2.19	0.34	1.10	0.86
Oxidation/Reduction Potential (mV)	34.2		-13.3	-5.6	-18.6	-11.1	-19.9	-15.4	-1.3	30.4	53.3	53.3
pH (standard units)	6.20		6.25	6.12	6.53	6.45	6.25	6.09	5.99	6.33	6.33	6.36
Temperature (degrees C)	18.5		22.8	20.4	17.7	19.8	23.6	18.7	17.9	19.8	17.4	15.0
Total Organic Carbon (mg/L)	2.12	1.98	8.30	5.18	4.06	5.88	6.88	6.68	4.19	2.64	3.58	1.82

Notes

1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
2. S = shallow well; I = intermediate well.

Abbreviations

µS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
field dup. = field duplicate
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed

TABLE 4: SWMU-172 AND SWMU-174 GROUP CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1, 2]

MAY 11, 2020

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3]											
		Source Area			Downgradient Plume Area				CPOC Area				
		GW152S	(field dup.)	GW153S	GW081S	GW172S	GW173S	GW226S	GW232S	GW233I	GW234S	GW235I	GW236S
Volatile Organic Compounds (µg/L)													
cis-1,2-Dichloroethene	0.03	**0.719**	**0.694**	**0.079**	**0.041**	**0.214**	**0.049**	**0.031**	**0.352**	**0.065**	**0.092**	**0.156**	**0.036**
Tetrachloroethene	0.02	**2.38**	**2.47**	0.020 U	0.020 U	**0.063**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Trichloroethene	0.02	**0.412**	**0.430**	0.020 U	0.020 U	**0.028**	**0.022**	0.020 U	0.020 U	0.020 U	0.020 U	**0.031**	0.020 U
Vinyl Chloride	0.11	0.046	**0.039**	**0.266**	0.020 U	**0.369**	**0.126**	0.059	**0.337**	0.020 U	0.032	0.020 U	0.020 U
Total Metals (µg/L)													
Arsenic	1.0	**1.95**	**2.21**	**3.85**	**2.03**	**7.03**	**6.72**	**3.33**	**4.71**	0.527	**5.31**	0.289	**2.10**
Copper	3.5	2.76	3.00	1.73	1.24	2.2	0.875	0.704	0.539	0.597	2.43	1.08	**4.24**
Lead	1.0	**1.09**	**1.18**	0.372	0.147	**1.07**	0.215	0.190	0.100 U	0.100 U	0.671	0.223	**2.61**

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. **Bolded** values exceed the current cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

µg/L = micrograms per liter
AOC = Area of Concern
CPOC = conditional point of compliance
field dup. = field duplicate
SWMU = Solid Waste Management Unit

TABLE 5: BUILDING 4-78/79 SWMU/AOC GROUP
GROUNDWATER ELEVATION DATA
MAY 12, 2020
Boeing Renton Facility, Renton, Washington

Well ID[1]	Screen Interval Depth (feet bgs)	TOC Elevation (feet)[2]	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)[2]
GW031S	5 to 25	19.44	4.09	15.35
GW033S	5 to 25	19.49	4.24	15.25
GW034S	5 to 25	19.65	4.32	15.33
GW038S	5 to 25	19.68	4.38	15.30
GW039S	3.5 to 13.5	19.30	3.97	15.33
GW143S	10 to 15	19.81	4.54	15.27
GW209S	3.5 to 13.3	19.37	4.02	15.35
GW210S	3.5 to 13.3	19.19	3.78	15.41
GW237S	5 to 15	18.85	3.60	15.25
GW238I	5 to 20	18.94	3.67	15.27
GW239I	15 to 20	19.69	4.42	15.27
GW240D	22 to 27	19.81	5.43	14.38
GW241S	4 to 14	20.28	5.04	15.24
GW242I	15 to 20	20.44	5.18	15.26
GW243I	5 to 20	19.49	4.17	15.32
GW244S	5 to 15	19.53	4.18	15.35

Notes
1. S = shallow well; I = intermediate well; D = deep well.
2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

Abbreviations
bgs = below ground surface
TOC = top of casing

TABLE 6: BUILDING 4-78/79 SWMU/AOC GROUP CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS [1]

MAY 12, 2020

Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]									
	Source Area							Downgradient Plume Area		
	GW031S	GW031S (field dup.)	GW033S	GW034S	GW039S	GW243I	GW244S	GW038S	GW209S	GW210S
Specific Conductivity (µS/cm)	450.3	NA	368.7	318.5	210.0	332.2	386.5	316.5	385.0	279.0
Dissolved Oxygen (mg/L)	0.59		0.56	0.33	0.94	1.31	0.77	6.24	0.26	0.96
Oxidation/Reduction Potential (mV)	15.7		-30.4	13.1	73.8	65.3	14.4	22.3	10.2	53.5
pH (standard units)	6.43		6.23	6.48	6.21	6.25	6.32	6.46	6.26	6.33
Temperature (degrees C)	19.2		20.0	18.2	17.9	17.2	17.3	20.5	18.3	20.2
Total Organic Carbon (mg/L)	13.42	13.48	14.61	7.98	5.52	12.09	14.25	11.62	10.81	226.1

Parameter	Well ID[2]						
	CPOC Area						
	GW143S	GW237S	GW238I	GW239I	GW240D	GW241S	GW242I
Specific Conductivity (µS/cm)	311.3	356.2	419.8	316.6	314.2	301.6	301.0
Dissolved Oxygen (mg/L)	0.45	0.24	0.67	0.72	0.72	0.99	1.00
Oxidation/Reduction Potential (mV)	-8.6	-34.2	-18.9	-26.1	-30.2	56.8	-2.8
pH (standard units)	6.13	6.45	6.21	6.23	6.37	6.15	6.12
Temperature (degrees C)	15.3	18.4	17.2	15.7	16.7	15.6	15.1
Total Organic Carbon (mg/L)	10.84	10.65	11.33	10.50	6.04	NA	NA

Notes

1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
2. S = shallow well; I = intermediate well; D = deep well.

Abbreviations

µS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
field dup. = field duplicate
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed

TABLE 7: BUILDING 4-78/79 SWMU/AOC GROUP
CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]
MAY 12, 2020
Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3]						
		Source Area						
		GW031S	GW031S (field dup.)	GW033S	GW034S	GW039S	GW243I	GW244S
Volatile Organic Compounds (µg/L)								
Benzene	0.80	**17.6**	**17.6 J**	**9.75**	0.20 U	0.20 U	0.20 U	0.46
cis-1,2-Dichloroethene	0.70	0.40 J	0.40 J	**39.5**	0.20 U	0.20 U	0.20 U	**1.06**
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	**87.3**	**0.21**	0.20 U	0.20 U	**0.85**
Total Petroleum Hydrocarbons (µg/L)								
TPH-G (C7-C12)	800	**1,880**	**1,790**	301	100 U	100 U	100 U	100 U

Analyte	Current Cleanup Level[4]	Well ID[3]		
		Downgradient Plume Area		
		GW038S	GW209S	GW210S
Volatile Organic Compounds (µg/L)				
Benzene	0.80	0.20 U	0.20 U	0.20 U
cis -1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U
Total Petroleum Hydrocarbons (µg/L)				
TPH-G (C7-C12)	800	100 U	100 U	100 U

Analyte	Current Cleanup Level[4]	Well ID[3]						
		CPOC Area						
		GW143S	GW237S	GW238I	GW239I	GW240D	GW241S	GW242I
Volatile Organic Compounds (µg/L)								
Benzene	0.80	0.20 U	**1.03**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis -1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total Petroleum Hydrocarbons (µg/L)								
TPH-G (C7-C12)	800	100 U	729	100 U	100 U	100 U	100 U	100 U

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. **Bolded** values exceed the current cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

µg/L = micrograms per liter
AOC = Area of Concern
CPOC = conditional point of compliance
field dup. = field duplicate
TPH-G = total petroleum hydrocarbons as gasoline
SWMU = Solid Waste Management Unit

TABLE 8: FORMER FUEL FARM GROUNDWATER ELEVATION DATA

MAY 11, 2020

Boeing Renton Facility, Renton, Washington

Well ID[1]	Screen Interval Depth (feet bgs)	TOC Elevation (feet)[2]	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)[2]
GW183S	5.5 to 15	26.58	7.91	18.67
GW184S	5.6 to 15	27.14	8.54	18.60
GW211S	4.8 to 14.7	27.77	9.20	18.57
GW212S	4.9 to 14.8	28.06	9.84	18.22
GW221S	5 to 15	27.93	9.30	18.63
GW224S	5 to 15	27.98	10.16	17.82
GW255S	6 to 16	27.49	9.45	18.04
GW256S	7 to 16	27.22	8.22	19.00
GW257S	8 to 16	27.87	8.75	19.12
GW258S	9 to 16	25.51	6.58	18.93

Notes

1. S = shallow well
2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

Abbreviations

bgs = below ground surface

TOC = top of casing

TABLE 9: FORMER FUEL FARM CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS [1]

MAY 11, 2020

Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]										
	Source Area	CPOC Area									
	GW255S	GW183S	GW184S	GW211S	GW212S	GW221S	GW224S	GW224S (field dup.)	GW256S	GW257S	GW258S
Specific Conductivity (µS/cm)	245.0	178.6	181.1	230.5	263.2	270.0	191.7		203.1	197.0	323.7
Dissolved Oxygen (mg/L)	0.76	0.45	0.34	0.96	2.90	1.09	1.16		1.49	1.02	0.90
Oxidation/Reduction Potential (mV)	-27.7	24.9	34.5	-27.7	46.4	-16.2	-18.9	NA	0.7	14.9	-23.0
pH (standard units)	6.35	6.43	6.35	6.21	5.74	6.21	6.12		6.24	6.18	6.41
Temperature (degrees C)	25.5	21.1	21.3	17.4	20.8	23.0	22.8		24.8	23.7	20.9

Notes

1. Primary geochemical indicators are measured in the field.
2. S = shallow well.

Abbreviations

µS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
field dup. = field duplicate
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed

TABLE 10: FORMER FUEL FARM CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2, 3]

MAY 11, 2020

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[5]	Well ID[4]													
		Source Area	CPOC Area												
		GW255S	GW183S	GW184S	GW211S		GW212S	GW221S		GW224S		GW224S (field dup.)		GW256S	GW257S	GW258S
Total Petroleum Hydrocarbons (mg/L)																
TPH-D (C12-C24)	0.5	0.100 U	0.110 U	0.100 U	0.282	*0.221*	0.100 U	**1.58**	***3.21***	**0.675**	*0.336 J*	**0.876**	*0.217 J*	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.100 U	0.110 U	0.100 U	0.267	*0.243*	0.100 U	**1.09**	***2.31***	**0.918 J**	***0.796 J***	**1.38 J**	*0.481 J*	0.100 U	0.100 U	0.100 U

Notes

1. Data qualifiers are as follows:
   J = the value is an estimate.
   U = The analyte was not detected at the reporting limit indicated.
2. **Bolded** values exceed the current cleanup levels.
3. *Italicized* values are results after silica gel cleanup to remove biogenic interference.
4. S = shallow well; I = intermediate well.
5. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

CPOC = conditional point of compliance
field dup. = field duplicate
mg/L = milligrams per liter
TPH-D = total petroleum hydrocarbons as diesel

TABLE 11: AOC-003 GROUNDWATER ELEVATION DATA

MAY 13, 2020

Boeing Renton Facility, Renton, Washington

Well ID[1]	Screen Interval Depth (feet bgs)	TOC Elevation (feet)[2]	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)[2]
GW188S[3]	3.5 to 13.5	18.78	NM	NM
GW247S	4 to 14	18.91	3.56	15.35
GW248I	10 to 20	18.78	3.36	15.42
GW249S[3]	4 to 14	18.85	NM	NM

Notes

1. S = shallow well; I = intermediate well.
2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.
3. Depth to water measurement not collected at GW188S or GW249S during the fourth quarter 2019.

Abbreviations

bgs = below ground surface

NM = not measured

TOC = top of casing

TABLE 12: AOC-003 CONCENTRATIONS
OF PRIMARY GEOCHEMICAL INDICATORS [1]
MAY 13, 2020
Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]	
	CPOC Area	
	GW247S	GW248I
Specific Conductivity (µS/cm)	388.2	474.9
Dissolved Oxygen (mg/L)	0.72	1.26
Oxidation/Reduction Potential (mV)	-30.7	-29.3
pH (standard units)	6.21	6.14
Temperature (degrees C)	16.5	17.3
Total Organic Carbon (mg/L)	10.91	14.28

Notes
1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
2. S = shallow well; I = intermediate well.

Abbreviations
µS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
mg/L = milligrams per liter
mV = millivolts

TABLE 13: AOC-003 CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

MAY 13, 2020

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3]	
		CPOC Area	
		GW247S	GW248I
Volatile Organic Compounds (µg/L)			
cis-1,2-Dichloroethene	0.78	0.584	0.020 U
Tetrachloroethene	0.02	0.020 U	0.020 U
Trichloroethene	0.16	0.020 U	0.020 U
Vinyl Chloride	0.24	**0.409**	**0.546**

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. **Bolded** values exceed the current cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

µg/L = micrograms per liter
AOC = Area of Concern
CPOC = conditional point of compliance
SWMU = Solid Waste Management Unit

TABLE 14: LOT 20/FORMER BUILDING 10-71 PARCEL
GROUNDWATER ELEVATION DATA[1]
MAY 12, 2020
Boeing Renton Facility, Renton, Washington

Well ID	Screen Interval Depth (feet bgs)	TOC Elevation (feet)[2]	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)[2]
10-71-MW-1	7 to 17	30.07	8.24	21.83
10-71-MW-2	7 to 17	29.88	8.47	21.41
10-71-MW-4	6 to 16	28.97	8.26	20.71

Notes
1. Water levels not measured in monitoring well 10-71-MW-3 so it is not included in this table.
2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

Abbreviations
bgs = below ground surface
TOC = top of casing

TABLE 15: LOT 20/FORMER BUILDING 10-71 PARCEL CONCENTRATIONS

OF PRIMARY GEOCHEMICAL INDICATORS [1]

MAY 12, 2020

Boeing Renton Facility, Renton, Washington

Parameter	Well ID		
	10-71-MW1	10-71-MW2	10-71-MW4
Specific Conductivity (µS/cm)	197.0	204.5	330.5
Dissolved Oxygen (mg/L)	0.74	1.04	1.04
Oxidation/Reduction Potential (mV)	1.7	1.9	-1.8
pH (standard units)	6.14	6.18	6.29
Temperature (degrees C)	18.2	17.6	20.7

Notes

1. Primary geochemical indicators are measured in the field.

Abbreviations

µS/cm = microsiemens per centimeter

degrees C = degrees Celsius

mg/L = milligrams per liter

mV = millivolts

TABLE 16: LOT 20/FORMER BUILDING 10-71 PARCEL
CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]
MAY 12, 2020
Boeing Renton Facility, Renton, Washington

Analyte	Well ID		
	10-71-MW1	10-71-MW2	10-71-MW4
Volatile Organic Compounds (µg/L)			
cis- 1,2-Dichloroethene	0.20 U	0.20 U	0.20 U
Toluene	0.20 U	0.20 U	0.20 U
Trichloroethene	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20 U	0.20 U	0.20 U

Notes
1. Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
2. No current cleanup standards were established for the Building 10-71 Parcel.

Abbreviations
µg/L = micrograms per liter

TABLE 17: APRON A GROUNDWATER ELEVATION DATA

MAY 12, 2020

Boeing Renton Facility, Renton, Washington

Well ID	Screen Interval Depth (feet bgs)	TOC Elevation (feet)[1]	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)[1]
GW262S	8 to 18	NA	4.71	NA
GW263S	8 to 18	NA	6.28	NA
GW264S	8 to 18	NA	4.22	NA

Notes

1. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

Abbreviations

bgs = below ground surface

NA = not available

TOC = top of casing

TABLE 18: APRON A CONCENTRATIONS OF
PRIMARY GEOCHEMICAL INDICATORS [1]
MAY 12, 2020
Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]		
	Source Area Wells		
	GW262S	GW262S (field dup.)	GW264S
Specific Conductivity (µS/cm)	470.1	NA	662.0
Dissolved Oxygen (mg/L)	0.98		1.56
Oxidation/Reduction Potential (mV)	-39.6		-61.2
pH (standard units)	6.29		6.11
Temperature (degrees C)	17.6		16.8
Total Organic Carbon (mg/L)	32.45	33.04	32.93

Notes
1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
2. S = shallow well.

Abbreviations
µS/cm = microsiemens per centimeter
degrees C = degrees Celsius
field dup. = field duplicate
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed

TABLE 19: APRON A CONCENTRATIONS
OF CONSTITUENTS OF CONCERN[1]

MAY 12, 2020

Boeing Renton Facility, Renton, Washington

	Well ID[2]		
	GW262S	GW262S (field dup.)	GW264S
Volatile Organic Compounds (µg/L)			
cis- 1,2-Dichloroethene	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20 U	0.20 U	**1.48**

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. No cleanup standards have been established for the Apron A Parcel.
2. S = shallow well.

Abbreviations

µg/L = micrograms per liter

Appendix A

TABLE A-1: GROUNDWATER COMPLIANCE MONITORING SCHEDULE

Boeing Renton Facility, Renton, Washington

Cleanup Action Area	Monitoring Frequency[1]		Groundwater Monitoring Wells[2]				Additional Water Level Monitoring Wells[3]	Constituents of Concern[4]	Analyses[5]
	Quarterly	Semiannual	Cross-Gradient Wells	Source Area Wells	Downgradient Plume Wells	CPOC Wells			
SWMU-168		X (1,3)	NA	GW228S[7]	NA	GW229S, GW230I, and GW231S		VC	SW8260C SIM
SWMU-172/SWMU-174	X		NA	GW152S and GW153S	GW081S, GW172S, GW173S, and GW226S	GW232S, GW233I, GW234S, GW235I, and GW236S		*cis* -1,2-DCE, PCE, TCE, VC	SW8260C SIM[6]
								Arsenic, copper, and lead	EPA 6020A
Building 4-78/79 SWMU/AOC Group	X		NA	GW031S, GW033S, GW034S, GW039S, GW243I, and GW244S	GW038S, GW209S, and GW210S	GW143S, GW237S, GW238I, GW239I, GW240D, GW241S, and GW242I		VC, TCE, *cis* -1,2-DCE, benzene	SW8260C[6]
								TPH-gasoline	NWTPH-Gx
Former Fuel Farm SWMU/AOC Group		X (2,4)	NA	GW255S, GW256S, and GW257S	NA	GW183S, GW184S, GW211S, GW212S, GW221S, GW224S, and GW258S		TPH-jet fuel, TPH-diesel	NWTPH-Dx
AOC-001/AOC-002[9]	X (CPOC wells)	X (1,3) (all other wells)	NA	GW193S[9]	GW190S[8,9], GW191D[8,9], GW192S[8,9], and GW246S[8,9]	GW185S[8,9], GW195S[8,9], GW196D[8,9], GW197S[8,9], and GW245S[8,9]		Benzene	SW8260C[6]
								TCE, *cis* -1,2-DCE, 1,1-dichloroethene, VC	SW8260C SIM[6]
AOC-003	X (CPOC wells)	X (1,3) (all other wells)	NA	GW249S	GW188S	GW247S and GW248I		PCE, TCE	SW8260C SIM[6]
								cis -1,2-DCE, VC	
AOC-004		X (1,3)	NA	GW250S	NA	GW174S		Lead	EPA 6020A
AOC-060		X (1,3)	GW012S and GW014S	GW009S	GW147S	GW149S, GW150S, GW252S, GW253I, and GW254S	GW010S and GW011D	VC	SW8260C SIM[6]
								TCE, *cis* -1,2-DCE	
AOC-090		X (1,3)	NA	GW189S	GW175I and GW176S	GW163I, GW165I, GW177I, GW178S, GW179I, GW180S, GW207S, and GW208S		1,1,2-Trichloroethane, acetone, benzene, toluene, carbon tetrachloride, chloroform, *cis* -1,2-DCE, *trans* -1,2-DCE, methylene chloride	SW8260C[6]
								1,1-Dichloroethene, 1,1,2,2-tetrachloroethane, VC, PCE, TCE	SW8260C SIM[6]
								TPH-gasoline	NWPTH-Gx
								TPH-diesel, TPH-motor oil	NWTPH-Dx
Building 4-70 Area		X (1,3)	NA	NA	NA	GW259S and GW260S		TCE, *cis* -1,2-DCE, VC	SW8260C[6]
Lot 20/Former Building 10-71		X (2,4)	NA	10-71-MW1, 10-71-MW2, and 10-71-MW4	NA	NA		Toluene, cis-1,2-DCE, TCE, VC	SW8260C[6]
Apron A		X (2,4)	NA	GW262S and GW264S	NA	NA		*cis* -1,2-DCE and VC	SW8260C[6]

Notes:

1. The EDR presents the groundwater monitoring frequency for each SWMU/AOC. For sites with semiannual monitoring frequency, specific quarters when monitoring will be conducted is indicated by 1 for quarter 1, 2 for quarter 2, etc.
2. Groundwater monitoring wells are also monitored for groundwater levels.
3. Additional wells are monitored for groundwater levels only.
4. In addition to COCs, primary geochemical indicators will be monitored during each regular monitoring event. Geochemical indicators are listed in Table A-2.
5. Details of analytical methods are specified in the Quality Assurance Project Plan, which is Appendix E to the Cleanup Action Plan (AMEC, 2012).
6. SIM methods will be used if the cleanup level is lower than the reporting limit achieved by the conventional 8021, 8260 or 8270 method. If cleanup levels become higher or if the conventional 8021, 8260 or 8270 methods are updated and able to achieve reporting limits below the cleanup levels, then the conventional method rather than the SIM method will be used.
7. GW228S will not be monitored on a semiannual basis - only the CPOC wells will be monitored on a semiannual basis for SWMU-168.
8. Monitoring wells were abandoned on 11/25/2019 prior to Apron R construction and will be replaced upon completion of construction.
9. Groundwater monitoring and sampling will be suspended until completion of construction.

Abbreviations:

AOC = area of concern
cis -1,2-DCE = *cis* -1,2 dichloroethene
COCs = constituents of concern
CPOC = conditional point of compliance
Cr = chromium
EDR = Engineering Design Report
EPA = Environmental Protection Agency
NA = not applicable
PCE = tetrachloroethene
SIM = selected ion monitoring
SWMU = solid waste management unit
TCE = trichloroethene
TPH = total petroleum hydrocarbons
trans -1,2-DCE = *trans* -1,2 dichloroethene
VC = vinyl chloride
VOCs = volatile organic compounds

TABLE A-2: MONITORED NATURAL ATTENUATION/MONITORED ATTENUATION SCHEDULE

Boeing Renton Facility, Renton, Washington

Cleanup Action Area	Groundwater Monitoring Wells				Primary Geochemical Parameters[2]		
						Monitoring Frequency[3]	
	Cross-Gradient Wells	Source Area Wells	Downgradient Plume Wells	CPOC Wells	Indicators	Quarterly	Semiannual
SWMU-168	NA	GW228S[4]	NA	GW229S, GW230I, and GW231S	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (1,3)
SWMU-172/SWMU-174	NA	GW152S and GW153S	GW081S, GW172S, GW173S, and GW226S	GW232S, GW233I, GW234S, GW235I, and GW236S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC	X	
Building 4-78/79 SWMU/AOC Group	NA	GW031S, GW033S, GW034S, GW039S, GW243I, and GW244S	GW038S, GW209S, and GW210S	GW143S, GW237S, GW238I, GW239I, GW240D, GW241S, and GW242I	Dissolved oxygen, pH, ORP, temperature, specific conductance in all wells, TOC in all wells except GW241S and GW242I	X	
Former Fuel Farm SWMU/AOC Group	NA	GW255S, GW256S, and GW257S	NA	GW183S, GW184S, GW211S, GW212S, GW221S, GW224S, and GW258S	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (2,4)
AOC-001/AOC-002[7]	NA	GW193S[7]	GW190S[6,7], GW191D[6,7], GW192S[6,7], and GW246S[6,7]	GW185S[6,7], GW195S[6,7], GW196D[6,7], GW197S[6,7], and GW245S[6,7]	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC	X (CPOC wells)	X (1,3) (all other wells)
AOC-003	NA	GW249S	GW188S	GW247S and GW248I	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC	X (CPOC wells)	X (1,3) (all other wells)
AOC-004	NA	GW250S	NA	GW174S	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (1,3)
AOC-060	GW012S and GW014S	GW009S	GW147S	GW149S, GW150S, GW252S, GW253I, and GW254S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC		X (1,3)
AOC-090	NA	GW189S	GW175I and GW176S	GW163I, GW165I, GW177I, GW178S, GW179I, GW180S, GW207S, and GW208S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC [5]		X (1,3)
Building 4-70 Area	NA	NA	NA	GW259S and GW260S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC		X (1,3)
Lot 20/Former Building 10-71	NA	10-71-MW1, 10-71-MW2, and 10-71-MW4	NA	NA	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (2,4)
Apron A	NA	GW262S and GW264S	NA	NA	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC		X (2,4)

Notes:

1. In addition to COCs listed in Table A-1, primary geochemical indicators will be monitored during each regular monitoring event.
2. All primary geochemical indicators except TOC are monitored in the field during sampling. TOC is analyzed in the laboratory following methods specified in the Quality Assurance Project Plan, which is Appendix E to the Cleanup Action Plan (AMEC, 2012).
   The primary geochemical indicators differ slightly depending on whether the site is a fuel-related site or a solvent-related site.
   At a fuel related site, TOC is not necessary; at a solvent-related site, TOC is a measure of how much electron donor remains present.
3. The EDR presents the groundwater monitoring frequency for each SWMU/AOC. For sites with semiannual monitoring frequency, specific quarters when monitoring will be conducted is indicated by 1 for quarter 1, 2 for quarter 2, etc.
4. Primary geochemical parameters will not be collected at GW228S - only at CPOC wells that are sampled semiannually.
5. TOC will only be analyzed in the groundwater from the source area well (GW189S).
6. Monitoring wells were abandoned on 11/25/2019 prior to Apron R construction and will be replaced upon completion of construction.
7. Groundwater monitoring and sampling will be suspended until completion of construction.

Abbreviations:

AOC = area of concern
COCs = constituents of concern
CPOC = conditional point of compliance
EDR = Engineering Design Report
NA = not applicable
ORP = oxidation reduction potential
SWMU = solid waste management unit
TOC = total organic carbon

Appendix B

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1253

Sample Number: RGW152S- 200511 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.51 Time: 1224 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 11 /202(1227 End Purge: Date/Time: 05/ 11 /2020 @ 1250 Gallons Purged: 0.3

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1227	16.8	235.7	0.7	6.13	53.3		8.51		
1230	19.5	238.5	0.58	6.13	49.1		8.54		
1233	19.2	214.3	0.41	6.15	44.7		8.54		
1236	19	194.3	0.37	6.16	41.5				
1239	18.5	178.4	0.33	6.17	38.1				
1242	18.3	170.3	0.36	6.19	36.2				
1245	18.5	166.6	0.36	6.2	34.2				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.7	166.2	0.35	6.2	33.8				
2	18.7	165.2	0.37	6.2	33.1				
3	18.7	164.3	0.38	6.21	32.6				
4	18.5	163.3	0.38	6.21	32.4				
Average:	18.7	164.8	0.4	6.2	33.0	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s): Duplicate Location (DUP1)

Comments:

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 737

Sample Number: RGWDUP1 200511 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) Time: Flow through cell vol. GW Meter No.(s)

Begin Purge: Date/Time: 05/ /2020 @ End Purge: Date/Time: 05/ /2020 @ Gallons Purged:

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		

DUPLICATE TO RGW152S

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ☐ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.7	165.7	0.36	6.20	33.3				
2	18.7	164.8	0.38	6.21	32.8				
3	18.6	163.5	0.38	6.21	32.6				
4	18.4	162.6	0.39	6.20	32.4				
Average:	18.6	164.2	0.38	6.21	32.8	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s): Duplicate to RGW152S

Comments:

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 1106

Sample Number: RGW153S- 200511 | Weather: SUNNY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.78 Time: 1039 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/ 11/2020 (1041 End Purge: Date/Time: 05/ 11/2020 @ 1102 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1044	18.4	201.3	3.02	6.01	10.5		8.79		
1047	19.6	234.4	2.54	6.06	1.0		8.78		
1050	21.0	252.6	2.32	6.12	-3.7		8.78		
1053	21.8	266.2	2.18	6.17	-8.0				
1056	22.4	272.8	2.04	6.20	-10.4				
1059	22.7	276.6	1.94	6.24	-12.5				
1101	22.8	278.2	1.86	6.25	-13.3				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): SLIGHT TAN, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	22.7	278.6	1.83	6.26	-13.6				
2	22.8	278.8	1.83	6.26	-13.7				
3	22.8	279.0	1.81	6.26	-13.7				
4	22.8	279.2	1.83	6.26	-14.3				
Average:	22.8	278.9	1.83	6.26	-13.8	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 1031

Sample Number: RGW081S- 200511 | Weather: SUNNY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 7.73 Time: 1002 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/ 11/2020 (1004 End Purge: Date/Time: 05/ 11/2020 @ 1021 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1007	18.1	209.8	1.88	6.01	7.7		7.73		
1010	18.7	220.4	1.85	5.99	4.7		7.73		
1013	20.3	232.4	1.70	6.04	-0.5		7.73		
1016	20.4	239.6	1.83	6.09	-2.7				
1019	20.4	244.4	1.79	6.12	-5.6				
1022									
1024									

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NOCOLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	20.4	244.6	1.79	6.13	-6.0				
2	20.5	244.8	1.79	6.13	-6.1				
3	20.5	245.0	1.79	6.13	-6.3				
4	20.5	245.3	1.80	6.14	-6.6				
Average:	20.5	244.9	1.79	6.13	-6.3	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1107

Sample Number: RGW172S- 200511 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.54 Time: 1043 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 11 /202(1046 End Purge: Date/Time: 05/ 11 /2020 @ Gallons Purged: 0.3

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1046	17.7	356.6	0.30	6.30	53.7		8.69		
1049	17.8	332.6	0.08	6.42	30.7		8.69		
1052	17.6	307.3	0.07	6.52	7.7		8.69		
1055	17.6	300.8	0.08	6.53	0.3				
1058	17.6	297.4	0.09	6.53	-9.1				
1101	17.6	294.4	0.09	6.53	-10.1				
1104	17.6	291.1	0.10	6.53	-15.9				
1106	17.7	289.3	0.12	6.53	-18.6				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.8	288.6	0.12	6.53	-19.6				
2	17.8	288.7	0.13	6.53	-20.3				
3	17.7	288.6	0.13	6.53	-21.1				
4	17.8	288.4	0.13	6.53	-21.7				
Average:	17.8	288.6	0.13	6.53	-20.7	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1143

Sample Number: RGW173S- 200511 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.65 Time: 1120 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/11 /202(1121 End Purge: Date/Time: 05/ 11 /2020 @ Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1121	15.8	303.5	1.61	6.19	31.5		8.65		
1124	17.4	340.4	1.03	6.19	25.1		8.52		
1127	18.7	368.7	0.64	6.31	13.3		8.62		
1130	19.0	375.6	0.57	6.35	9.1				
1133	19.4	385.5	0.45	6.41	0.0				
1136	19.6	387.5	0.44	6.44	-6.3				
1139	19.8	388.4	0.45	6.45	-10.2				
1141	19.8	388.6	0.45	6.45	-11.1				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	19.9	388.8	0.45	6.45	-12.0				
2	19.9	389.0	0.46	6.45	-12.7				
3	19.9	389.1	0.46	6.45	-13.4				
4	20.0	389.3	0.47	6.45	-14.0				
Average:	19.9	389.1	0.46	6.45	-13.0	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
1	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments: MSMSD Location

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 1146

Sample Number: RGW226S- 200511 | Weather: SUNNY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.39 Time: 1117 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/ 11/2020 (1119 End Purge: Date/Time: 05/ 11/2020 @ 1141 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1122	19.4	241.8	1.95	6.08	5.2		8.39		
1125	20.8	286.9	1.78	6.08	-4.8		8.39		
1128	22.1	309.3	1.70	6.18	-11.9		8.39		
1131	22.3	316.5	1.51	6.19	-13.7				
1134	22.8	317.0	1.35	6.21	-16.6				
1137	23.2	315.3	1.32	6.23	-18.0				
1139	23.6	313.5	1.99	6.25	-19.9				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): TANISH, LOW-MED TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	23.8	313.4	1.87	6.25	-20.0				
2	23.7	313.4	1.82	6.24	-20.1				
3	23.7	313.2	1.83	6.25	-20.2				
4	23.7	313.0	1.89	6.25	-20.3				
Average:	23.7	313.3	1.85	6.25	-20.2	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 911

Sample Number: RGW232S- 200511 | Weather: CLOUDY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 6.32 Time: 840 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/ 11/2020 (845 End Purge: Date/Time: 05/ 11/2020 @ 906 Gallons Purged: 0.5

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
848	16.3	456.2	2.15	5.79	12.8		6.67		
851	17.0	476.8	2.33	5.77	7.0		6.72		
854	17.6	490.2	2.20	5.86	0.3		6.74		
857	18.2	502	2.28	5.93	-5.0		6.78		
900	18.4	509	2.62	5.98	-8.1		6.82		
903	18.6	514	3.13	6.06	-13.4		6.85		
905	18.7	516	2.61	6.09	-15.4				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.6	516	3.18	6.10	-15.8				
2	18.6	517	3.25	6.10	-15.9				
3	18.7	517	3.40	6.10	-16.0				
4	18.7	517	3.67	6.11	-16.5				
Average:	18.7	517	3.38	6.10	-16.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
1	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 946

Sample Number: RGW233I- 200511 | Weather: CLOUDY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 5.90 Time: 916 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/ 11/2020 (918 End Purge: Date/Time: 05/ 11/2020 @ 931 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
921	16.5	204.8	2.39	6.31	-4.7		5.90		
924	17.3	211.0	2.20	6.03	5.4		5.90		
927	17.6	218.3	2.16	5.94	6.1		5.90		
930	17.9	222.4	2.19	5.99	-1.3				
933									
936									
938									

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.0	222.8	2.18	6.00	-2.0				
2	18.0	223.2	2.18	6.00	-2.3				
3	18.0	223.3	2.19	6.00	-2.5				
4	18.0	223.4	2.18	6.00	-3.0				
Average:	18.0	223.2	2.18	6.00	-2.5	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1027

Sample Number: RGW234S- 200511 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 6.59 Time: 1003 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/11 /202(1004 End Purge: Date/Time: 05/ 11 /2020 @ Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1004	14.4	225.6	0.59	6.12	77.0		6.85		
1007	15.6	231.9	0.26	6.17	68.3		6.85		
1010	16.3	232.9	0.25	6.20	61.8		6.85		
1013	17.5	234.6	0.29	6.24	53.4		6.85		
1016	19.2	235.1	0.25	6.29	42.3				
1019	19.6	235.1	0.27	6.31	37.4				
1022	19.7	234.6	0.32	6.32	32.7				
1024	19.8	234.5	0.34	6.33	30.4				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): YELLOW, SOME BROWN PARTICULATES, NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	19.8	234.4	0.35	6.33	29.7				
2	19.8	234.1	0.35	6.33	29.2				
3	19.7	233.6	0.36	6.33	28.6				
4	19.7	233.5	0.37	6.33	28.0				
Average:	19.8	233.9	0.36	6.33	28.9	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 953

Sample Number: RGW235I- 200511 | Weather: CLOUDY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft): 6.39 Time: 929 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 11 /202(932 End Purge: Date/Time: 05/ 11 /2020 @ Gallons Purged:

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
932	14.3	133.0	0.96	6.41	63.9		6.34		
935	15.1	136.8	0.90	6.25	65.2		6.34		
938	15.7	138.6	0.92	6.29	60.5		6.34		
941	16.9	142.5	1.04	6.32	55.1				
944	17.3	144.0	1.04	6.33	53.7				
947	17.4	144.6	1.10	6.33	53.3				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.5	145.0	1.10	6.33	52.9				
2	17.6	145.5	1.08	6.33	52.9				
3	17.7	145.8	1.04	6.34	52.1				
4	17.8	146.4	1.04	6.34	51.7				
Average:	17.7	145.7	1.07	6.34	52.4	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 853

Sample Number: RGW236S- 200511 | Weather: CLOUDY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 6.21 Time: 830 Flow through cell vol. GW Meter No.(s slope4

Begin Purge: Date/Time: 05/ /2020 @ 831 End Purge: Date/Time: 05/ 11 /2020 @ 853 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
831	13.9	316.8	0.52	6.66	105.7		6.21		
834	14.8	319.5	0.51	6.53	102.4		6.23		
837	14.9	319.1	0.46	6.45	97.5		6.24		
840	14.3	296.5	0.38	6.36	87.4				
843	14.4	289.5	0.89	6.38	54.4				
847	14.7	288.7	0.88	6.36	54.1				CHANGED TANK
851	14.8	289.2	0.89	6.36	53.7				
853	15.0	289.9	0.86	6.36	53.3				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): TAN COLOR, SOME BROWN PARTICULATES, NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	15.2	290.2	0.85	6.35	52.9				
2	15.3	290.6	0.86	6.35	52.3				
3	15.4	291.4	0.87	6.36	51.7				
4	15.6	292.4	0.88	6.36	50.9				
Average:	15.4	291.2	0.87	6.36	52.0	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
3	(8260-SIM) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
1	(COD) (TOC5310C) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
1	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
1	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 1311

Sample Number: RGW031S- 200512 | Weather: CLOUDY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.09 Time: 1211 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/12/2020 @ 1244 End Purge: Date/Time: 05/12/2020 @ 1305 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
1247	17.7	416.6	0.32	6.26	46.0		4.10		
1250	18.4	429.2	0.38	6.31	39.1		4.10		
1253	18.7	437.2	0.32	6.34	33.9		4.10		
1256	18.8	442.5	0.40	6.38	26.8				
1259	18.9	446.9	0.46	6.40	23.0				
1302	19.1	450.3	0.58	6.42	16.0				
1304	19.2	450.3	0.59	6.43	15.7				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	19.2	449.9	0.60	6.43	14.9				
2	19.2	449.9	0.62	6.43	14.3				
3	19.2	451.8	0.63	6.43	13.8				
4	19.3	450.7	0.62	6.43	13.1				
Average:	19.2	450.6	0.62	6.43	14.0	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s): Duplicate Location (DUP2)

Comments:

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 800

Sample Number: RGWDUP2 200512 | Weather: CLOUDY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) Time: Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/12/2020 @ End Purge: Date/Time: 05/12/2020 @ Gallons Purged:

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ☐ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		

DUPLICATE TO RGW031S

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☒ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ☒ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☒ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	19.3	450.5	0.62	6.43	12.6				
2	19.3	450.7	0.64	6.44	12.2				
3	19.3	452.9	0.65	6.44	11.8				
4	19.3	452.0	0.62	6.44	11.4				
Average:	19.3	451.5	0.63	6.44	12.0	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s): Duplicate to RGW031S

Comments:

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1410

Sample Number: RGW033S- 200512 | Weather: SUNNY

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.24 Time: 1343 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 12 /2020 @ 1345 End Purge: Date/Time: 05/ 12 /2020 @ 1407 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1348	16.7	334.2	0.19	6.25	-2.3		4.25		
1351	17.8	345.3	0.22	6.25	-11.9		4.24		
1354	18.4	353.2	0.31	6.24	-18.0		4.24		
1357	18.8	356.5	0.36	6.24	-22.1				
1400	18.9	359.3	0.40	6.24	-24.2				
1403	19.6	364.4	0.47	6.23	-28.0				
1406	20.0	368.7	0.56	6.23	-30.4				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO ODOR, NO SHEEN, TRACE DARK FINES

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	20.1	369.0	0.56	6.23	-30.6				
2	20.1	369.4	0.58	6.23	-30.8				
3	20.2	369.7	0.57	6.23	-30.9				
4	20.2	370.1	0.57	6.23	-30.9				
Average:	20.2	369.6	0.57	6.23	-30.8	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.12.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 1011

Sample Number: RGW034S- 200512 | Weather: CLOUDY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.32 Time: 942 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/12/2020 @ 945 End Purge: Date/Time: 05/12/2020 @ 1006 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
948	16.1	305.4	0.14	6.34	51.8		4.32		
951	17.1	310.5	0.17	6.39	43.0		4.32		
954	17.7	315.6	0.19	6.44	32.0		4.32		
957	17.8	316.6	0.21	6.46	29.0				
1000	17.9	318.0	0.23	6.47	23.7				
1003	18.1	318.4	0.30	6.47	17.2				
1005	18.2	318.5	0.33	6.48	13.1				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.2	318.5	0.34	6.48	12.7				
2	18.2	318.5	0.34	6.48	12.3				
3	18.2	318.7	0.34	6.49	11.9				
4	18.2	318.5	0.36	6.49	11.5				
Average:	18.2	318.6	0.35	6.49	12.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 936

Sample Number: RGW039S- 200512 | Weather: RAIN

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 3.97 Time: 847 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/12/2020 @ 911 End Purge: Date/Time: 05/12/2020 @ 924 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
914	16.9	206.9	1.22	6.20	73.6		3.97		
917	17.2	208.1	0.98	6.20	74.8		3.97		
920	17.5	209.0	0.96	6.21	74.5		3.97		
923	17.9	210.0	0.94	6.21	73.8				
926									
929									
931									

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.9	210.3	0.98	6.21	73.7				
2	18.0	210.4	1.02	6.21	73.6				
3	18.0	210.4	1.01	6.21	73.6				
4	18.0	210.5	0.99	6.21	73.5				
Average:	18.0	210.4	1.00	6.21	73.6	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 906

Sample Number: RGW-243I- 200512 | Weather: RAIN

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.17 Time: 830 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/12/2020 @ 837 End Purge: Date/Time: 05/12/2020 @ 857 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
840	15.8	303.5	1.01	6.35	97.8		4.17		
843	15.9	304.3	1.45	6.06	90.5		4.17		
846	16.3	308.2	1.64	6.04	83.9		4.17		
849	16.5	309.1	1.56	6.15	76.5				
852	16.8	318.9	1.40	6.20	71.2				
855	16.9	325.4	1.34	6.23	68.4				
857	17.2	332.2	1.31	6.25	65.3				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.2	333.2	1.31	6.25	64.8				
2	17.2	333.2	1.31	6.26	64.4				
3	17.2	334.1	1.32	6.26	64.0				
4	17.2	334.8	1.31	6.26	63.6				
Average:	17.2	333.8	1.31	6.26	64.2	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 1046

Sample Number: RGW-244S 200512 | Weather: CLOUDY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.18 Time: 1016 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/12/2020 @ 1021 End Purge: Date/Time: 05/12/2020 @ 1042 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1024	16.2	355.4	0.27	6.16	39.6		4.18		
1027	16.8	361.8	0.34	6.19	33.9		4.18		
1030	17.1	369.9	0.46	6.23	29.0		4.18		
1033	17.3	378.4	0.57	6.27	24.0				
1036	17.3	381.4	0.66	6.30	20.1				
1039	17.3	384.9	0.75	6.31	16.4				
1041	17.3	386.5	0.77	6.32	14.4				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.3	386.5	0.78	6.32	14.0				
2	17.3	386.6	0.78	6.32	13.7				
3	17.2	387.8	0.78	6.32	13.4				
4	17.2	387.9	0.78	6.32	13.1				
Average:	17.3	387.2	0.78	6.32	13.6	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 1401

Sample Number: RGW038S- 200512 | Weather: RAIN

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft): 4.38 Time: 1333 Flow through cell vol. GW Meter No.(s: 1

Begin Purge: Date/Time: 05/12/2020 @ 1335 End Purge: Date/Time: 05/12/2020 @ 1350 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1338	17.2	265.3	7.16	6.35	43.8		4.40		
1341	18.2	284.5	6.80	6.40	36.2		4.40		
1344	19.4	300.0	6.47	6.44	30.5		4.40		
1347	20.1	310.7	6.34	6.45	26.2				
1350	20.5	316.5	6.24	6.46	22.3				
1353									
1355									

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	20.5	317.1	6.24	6.46	21.9				
2	20.5	317.0	6.24	6.46	21.6				
3	20.5	317.1	6.20	6.46	21.3				
4	20.6	317.3	6.20	6.46	21.1				
Average:	20.5	317.1	6.22	6.46	21.5	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1357

Sample Number: RGW209S- 200512 | Weather: RAINY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.02 Time: 1332 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/12 /202(1333 End Purge: Date/Time: 05/ 12 /2020 @ 1352 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
1333	17.0	373.1	0.15	6.29	32.3		4.02		
1336	17.6	375.6	0.11	6.27	25.9		4.02		
1339	17.6	376.7	0.20	6.22	25.2		4.02		
1342	17.6	378.1	0.14	6.26	19.0				
1345	18.0	381.7	0.28	6.26	14.6				
1348	18.1	382.8	0.27	6.26	14.0				
1351	18.3	385.0	0.26	6.26	10.2				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.2	385.1	0.25	6.26	9.1				
2	18.1	384.6	0.22	6.26	8.6				
3	18.0	384.0	0.24	6.26	8.4				
4	18.0	383.5	0.23	6.26	8.0				
Average:	18.1	384.3	0.24	6.26	8.5	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12/2020@ 1231

Sample Number: RGW210S- 200512 | Weather: CLOUDY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 3.78 Time: 1157 Flow through cell vol. GW Meter No.(s 1

Begin Purge: Date/Time: 05/12/2020 @ 1200 End Purge: Date/Time: 05/12/2020 @ 1220 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1203	15.5	257.2	2.05	6.39	52.2		3.78		
1206	15.8	258.2	2.02	6.32	55.5		3.78		
1209	16.3	260.1	1.94	6.26	59.0		3.78		
1212	16.4	262.1	1.74	6.27	58.2				
1215	18.0	264.7	1.56	6.29	56.0				
1218	19.4	274.6	1.48	6.30	54.4				
1220	20.2	279.0	0.96	6.33	53.5				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): BROWN, HIGH TURB, NO/NS, LOTS OF PARTICULATES.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	20.3	279.2	0.73	6.34	53.4				
2	20.2	279.8	0.65	6.35	53.0				
3	20.5	280.7	0.48	6.38	52.3				
4	20.5	280.8	0.26	6.40	51.7				
Average:	20.4	280.1	0.53	6.37	52.6	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments: BLADDER BARELY PUMPS ENOUGH. TAKES LONG TIME TO GET SAMPLE.

Signature: JAN Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1057

Sample Number: RGW143S- 200512 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.54 Time: 1016 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 12 /202(1033 End Purge: Date/Time: 05/ 12 /2020 @ 1044 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1033	15.4	299.9	0.48	6.28	-3.1		4.54		
1036	15.5	305.9	0.41	6.23	-6.1		4.54		
1039	15.4	310.3	0.41	6.17	-7.0		4.54		
1042	15.3	311.3	0.45	6.13	-8.6				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): LIGHT YELLOW COLOR, SOME RED PARTICULATES, NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	15.3	311.0	0.45	6.15	-9.8				
2	15.3	311.0	0.46	6.15	-10.3				
3	15.3	310.9	0.46	6.15	-10.7				
4	15.2	311.1	0.47	6.16	-11.1				
Average:	15.3	311.0	0.46	6.15	-10.5	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1243

Sample Number: RGW237S- 200512 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 3.6 Time: 1218 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 12 /202(1221 End Purge: Date/Time: 05/ 11 /2020 @ 1238 Gallons Purged: 0.3

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1221	16.0	294.2	1.42	6.32	4.6		3.60		
1224	17.1	319.3	0.68	6.31	1.4		3.60		
1227	18.0	345.2	0.33	6.41	-19.0		3.60		
1230	18.1	351.3	0.24	6.46	-24.4				
1233	18.4	355.1	0.22	6.46	-28.8				
1236	18.4	356.2	0.24	6.45	-34.2				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): LIGHT YELLOW CLEAR NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.5	355.9	0.24	6.44	-35.7				
2	18.5	355.9	0.25	6.44	-35.5				
3	18.5	356.0	0.25	6.44	-36.7				
4	18.6	355.9	0.25	6.44	-37.2				
Average:	18.5	355.9	0.25	6.44	-36.3	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1213

Sample Number: RGW238I- 200512 | Weather: RAINY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 3.67 Time: 1146 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 11 /202(1147 End Purge: Date/Time: 05/ 12 /2020 @ Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1147	15.5	445.2	3.00	6.24	8.3		3.65		
1150	16.0	444.5	0.24	5.21	0.1		3.65		
1153	16.4	432.5	0.30	6.22	-6.0				
1156	16.5	430.0	0.34	6.22	-7.9				
1159	16.6	424.6	0.57	6.22	-10.5				
1202	16.6	424.0	0.45	6.21	-11.2				
1205	17.0	420.4	0.58	6.21	-15.5				
1207	17.2	419.8	0.67	6.21	-18.9				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): SLIGHT YELLOW COLOR, CLEAR, NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.2	419.9	0.67	6.21	-19.4				
2	17.2	419.9	0.68	6.21	-19.6				
3	17.2	420.1	0.69	6.21	-20.1				
4	17.2	420.1	0.70	6.21	-20.4				
Average:	17.2	420.0	0.69	6.21	-19.9	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/12 /2020@ 1123

Sample Number: RGW239I- 200512 | Weather: RAINY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.42 Time: 1050 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/12 /202(1058 End Purge: Date/Time: 05/ 12 /2020 @ Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1058	16.1	274.2	0.52	6.13	4.9		4.98		
1101	15.7	303.2	0.40	6.11	-4.5		4.78		
1104	15.7	310.0	0.45	6.17	-11.5		4.78		
1107	15.7	312.7	0.51	6.20	-15.2				
1110	15.9	316.5	0.66	6.23	-22.8				
1113	15.9	316.6	0.66	6.23	-23.2				
1116	15.8	316.7	0.71	6.23	-25.6				
1118	15.7	316.6	0.72	6.23	-26.1				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	15.8	316.5	0.73	6.24	-26.7				
2	15.7	316.5	0.74	6.23	-27.0				
3	15.7	316.5	0.74	6.23	-27.2				
4	15.7	316.4	0.74	6.24	-27.6				
Average:	15.7	316.5	0.74	6.24	-27.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments: MSMSD Location

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1027

Sample Number: RGW240D- 200512 | Weather: CLOUDY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 5.43 Time: 1002 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 12 /202(1003 End Purge: Date/Time: 05/ 12 /2020 @ 1024 Gallons Purged: 0.3

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
1003	15.9	316.3	0.48	6.21	12.1		5.71		
1006	16.3	316.4	0.50	6.27	4.6		5.63		
1009	16.6	317.0	0.51	6.29	1.5		5.43		
1012	16.8	317.2	0.59	6.34	-9.2		5.43		
1015	16.7	316.4	0.63	6.36	-16.2				
1018	16.7	315.3	0.67	6.36	-21.4				
1021	16.8	314.8	0.70	6.36	-27.0				
1023	16.7	314.2	0.72	6.37	-30.2				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	16.7	314.0	0.72	6.37	-31.0				
2	16.7	314.0	0.72	6.37	-31.4				
3	16.7	313.9	0.73	6.36	-31.9				
4	16.7	314.0	0.74	6.37	-32.5				
Average:	16.7	314.0	0.73	6.37	-31.7	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 903

Sample Number: RGW-241S 200512 | Weather: DRIZZLY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 5.04 Time: 839 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 12 /202(840 End Purge: Date/Time: 05/ 12 /2020 @ Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ☐ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
840	15.0	300.9	0.90	6.01	194.6		5.04		
843	15.4	301.5	0.85	5.99	180.5		5.04		
846	15.6	302.2	0.83	6.03	161.2		5.04		
849	15.6	302.1	0.87	6.09	132.2				
852	15.6	301.9	0.86	6.11	115.8				
855	15.6	302.2	0.89	6.12	98.9				
858	15.6	301.6	0.97	6.14	60.5				
900	15.6	301.6	0.99	6.15	56.8				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	15.6	301.5	0.98	6.15	53.4				
2	15.6	301.7	0.98	6.15	51.1				
3	15.6	301.7	0.98	6.15	49.0				
4	15.7	301.7	0.98	6.15	46.9				
Average:	15.6	301.7	0.98	6.15	50.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 933

Sample Number: RGW-242I- 200512 | Weather: CLOUDY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 5.18 Time: 857 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 12 /202(907 End Purge: Date/Time: 05/ 12 /2020 @ 928 Gallons Purged: 0.3

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
907	15.4	282.0	0.62	6.09	43.7		5.12		
910	15.2	298.6	0.52	6.09	29.6		5.13		
913	15.2	299.5	0.55	6.06	27.3		5.13		
916	15.1	300.5	0.65	6.04	19.7				
919	15.1	300.6	0.76	6.06	14.0				
922	15.1	300.6	0.84	6.09	7.8				
925	15.1	300.8	0.96	6.11	1.3				
927	15.1	301.0	1.00	6.12	-2.8				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type DED BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	15.2	301.6	1.07	6.13	-6.3				
2	15.2	301.6	1.07	6.14	-7.2				
3	15.2	301.7	1.07	6.15	-8.2				
4	15.2	301.7	1.08	6.15	-8.9				
Average:	15.2	301.7	1.07	6.14	-7.7	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/12/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1230

Sample Number: RGW255S- 200511 | Weather: SUNNY, HOT

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 9.45 Time: 1157 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 11 /2020 @1159 End Purge: Date/Time: 05/ 11 /2020 @ 1222 Gallons Purged: <1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1202	17.8	239.4	0.50	6.32	-17.0		9.46		
1205	20.1	241.4	0.62	6.33	-29.7		9.46		
1208	21.7	243.5	0.63	6.33	-34.9		9.46		
1211	22.5	244.6	0.63	6.33	-36.5				
1214	23.8	244.9	0.70	6.33	-35.6				
1217	24.3	245.4	0.77	6.33	-33.3				
1220	25.5	245.0	0.76	6.35	-27.7				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO SHEEN, NO ODOR

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	25.6	244.9	0.77	6.35	-27.3				
2	25.6	245.1	0.77	6.34	-26.8				
3	25.6	245.0	0.77	6.35	-26.7				
4	25.7	245.0	0.79	6.35	-26.7				
Average:	25.6	245.0	0.78	6.35	-26.9	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
4	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.11.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1433

Sample Number: RGW183S- 200511 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Damaged (NO) | Describe: Flush Mount

DTW Before Purging (ft) 7.91 | Time: 1406 | Flow through cell vol. | GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 11 /202(1407 | End Purge: Date/Time: 05/ 11 /2020 @ 1428 | Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits	**+/- 3%**	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**	**>/= 1 flow through cell**	
1407	15.2	155.9	0.41	6.38	53.0		7.94		
1410	15.7	157.6	0.35	6.33	52.3		7.94		
1413	16.7	160.8	0.36	6.36	43.8		7.94		
1416	17.4	163.6	0.46	6.40	39.9				
1419	18.6	168.0	0.41	6.43	33.6				
1422	20.4	175.6	0.55	6.43	30.1				
1425	21.3	179.5	0.48	6.43	26.1				
1427	21.1	178.6	0.45	6.43	24.9				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	21.1	178.6	0.43	6.43	24.3				
2	21.0	178.2	0.40	6.43	23.9				
3	20.9	177.9	0.39	6.43	23.5				
4	20.9	177.9	0.42	6.43	23.3				
Average:	21.0	178.2	0.41	6.43	23.8	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: CEB | Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 1347

Sample Number: RGW184S- 200511 | Weather: SUNNY

Landau Representative: CEB

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.54 Time: 1322 Flow through cell vol. GW Meter No.(s SLOPE4

Begin Purge: Date/Time: 05/ 11 /202(1325 End Purge: Date/Time: 05/ 11 /2020 @ 1341 Gallons Purged: 0.3

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1325	18.5	171.2	1.07	6.22	54.1		8.54		
1328	19.7	175.1	0.82	6.27	48.2		8.54		
1331	20.9	179.4	0.53	6.32	41.9		8.54		
1334	21.1	180.9	0.35	6.34	37.0				
1337	21.2	181.0	0.35	6.35	31.5				
1340	21.3	181.1	0.34	6.35	34.5				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR COLORLESS NO ODOR NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	21.4	181.2	0.31	6.34	34.0				
2	21.4	181.3	0.30	6.35	33.7				
3	21.5	181.3	0.32	6.35	33.3				
4	21.5	181.5	0.32	6.35	32.9				
Average:	21.5	181.3	0.31	6.35	33.5	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA ☐ OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic
	VOC (Boeing short list)
	Methane Ethane Ethene Acetylene
	others

Duplicate Sample No(s):

Comments:

Signature: CEB Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 940

Sample Number: RGW211S- 200511 | Weather: PARTLY CLOUDY, 60S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 9.2 Time: 909 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 11 /2020 @ 911 End Purge: Date/Time: 05/ 11 /2020 @ 934 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
914	15.7	194.2	0.76	5.86	25.7		9.22		
917	16.6	236.6	0.51	5.97	-8.4		9.21		
920	16.9	238.7	0.52	6.12	-22.7		9.21		
923	17.0	232.3	0.61	6.16	-26.0				
926	17.1	231.2	0.67	6.17	-27.1				
929	17.3	230.9	0.87	6.19	-28.3				
932	17.4	230.5	0.96	6.21	-27.7				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER - DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): BROWN, CLEAR TO SLIGHTLY CLOUDY, NO SHEEN, NO ODOR

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.4	230.2	0.99	6.21	-28.0				
2	17.4	230.3	1.01	6.22	-27.9				
3	17.4	229.7	1.03	6.22	-28.0				
4	17.4	229.8	1.05	6.22	-28.3				
Average:	17.4	230.0	1.02	6.22	-28.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
4	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.11.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1045

Sample Number: RGW212S- 200511 | Weather: SUNNY, HIGH 60S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 9.84 Time: 1012 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 11 /2020 @ 1014 End Purge: Date/Time: 05/ 11 /2020 @ 1037 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
1017	15.6	230.5	3.03	5.74	52.1		9.94		
1020	16.8	238.3	2.69	5.72	51.2		9.95		
1023	17.8	243.3	3.08	5.74	48.6		9.93		
1026	18.7	248.5	2.99	5.72	48.1				
1029	19.7	255.5	2.87	5.73	47.2				
1032	20.2	258.9	2.93	5.74	46.5				
1035	20.8	263.2	2.90	5.74	46.4				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): BROWN, CLOUDY TO SLIGHTLY CLOUDY, NO ODOR, NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	21.4	264.4	3.01	5.74	46.4				
2	21.3	265.1	2.92	5.74	46.4				
3	21.2	266.1	3.10	5.74	46.7				
4	21.7	266.9	2.97	5.74	46.9				
Average:	21.4	265.6	3.00	5.74	46.6	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
4	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.11.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 1311

Sample Number: RGW221S- 200511 | Weather: SUNNY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 9.30 Time: 1233 Flow through cell vol. GW Meter No.(s) 1

Begin Purge: Date/Time: 05/ 11/2020 @ 1236 End Purge: Date/Time: 05/ 11/2020 @ 1252 Gallons Purged: 0.25

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**	**through cell vol.**	
1239	19.2	247.4	2.60	6.23	-1.4		9.30		
1242	21.2	273.7	1.25	6.18	-8.0		9.30		
1245	21.7	269.9	1.15	6.21	-13.6		9.30		
1248	22.2	269.2	1.10	6.22	-15.6				
1251	23.0	270.0	1.09	6.21	-16.2				
1254									
1256									

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, ODOR, NO SHEEN.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	23.3	270.1	1.09	6.21	-16.7				
2	23.2	270.1	1.08	6.21	-16.7				
3	23.2	270.1	1.08	6.21	-17.0				
4	23.4	270.2	1.07	6.21	-17.5				
Average:	23.3	270.1	1.08	6.21	-17.0	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: JAN Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1130

Sample Number: RGW224S- 200511 | Weather: SUNNY, WARM

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 10.16 Time: 1102 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 11 /202(1103 End Purge: Date/Time: 05/ 11 /2020 @ 1125 Gallons Purged: <1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits	**+/- 3%**	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**	**>/= 1 flow through cell**	
1105	17.6	189.3	1.84	6.08	29.7		10.25		
1108	19.5	190.2	1.50	6.10	-14.8		10.20		
1111	20.7	189.1	1.35	6.12	-16.6		10.20		
1114	21.6	190.4	1.33	6.11	-18.8				
1117	22.0	190.9	1.27	6.11	-19.5				
1120	22.7	191.5	1.15	6.12	-19.4				
1123	22.8	191.7	1.16	6.12	-18.9				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO ODOR, NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	22.8	191.7	1.20	6.12	-19.6				
2	22.9	192.0	1.19	6.13	-18.7				
3	22.9	192.2	1.15	6.12	-18.6				
4	23.0	192.5	1.14	6.13	-18.2				
Average:	22.9	192.1	1.17	6.13	-18.8	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
4	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s): Duplicate Location (DUP3)

Comments:

Signature: BXM Date: 5.11.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 850

Sample Number: DUP3- 200511 | Weather: SUNNY, WARM

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 1016 Time: 1102 Flow through cell vol. GW Meter No.(s)

Begin Purge: Date/Time: 05/ 11 /202(1103 End Purge: Date/Time: 05/ 11 /2020 @ 1125 Gallons Purged:

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		

DUPLICATE TO RGW224S

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ■ Stainless Steel ■ PVC ☐ Teflon ■ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ■ Alconox Wash ☐ Tap Rinse ■ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO ODOR, NO SHEEN

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	22.9	191.9	1.17	6.12	-19.3				
2	22.9	192.0	1.13	6.12	-19.0				
3	23.0	192.1	1.16	6.12	-18.4				
4	23.0	192.6	1.11	6.13	-17.9				
Average:	23.0	192.2	1.14	6.12	-18.7	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
4	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s): Duplicate to RGW224S

Comments:

Signature: BXM Date: 5.11.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1315

Sample Number: RGW256S- 200511 | Weather: SUNNY, HOT

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.22 Time: 1247 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 11 /2020 @ 1249 End Purge: Date/Time: 05/ 11 /2020 @ 1312 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
1252	18.0	163.1	1.99	6.38	21.9		8.22		
1255	19.7	173.2	1.88	6.32	9.0		8.22		
1258	21.1	181.3	1.77	6.29	3.9		8.22		
1301	22.4	189.6	1.64	6.29	0.6				
1304	23.8	195.9	1.59	6.25	-0.7				
1307	24.0	198.5	1.54	6.24	-0.6				
1310	24.8	203.1	1.49	6.24	0.7				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO SHEEN, NO ODOR

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	24.9	203.9	1.43	6.24	1.0				
2	25.0	204.3	1.47	6.24	1.1				
3	25.1	204.7	1.49	6.24	1.2				
4	25.1	205.1	1.48	6.24	1.4				
Average:	25.0	204.5	1.47	6.24	1.2	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: Date:

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 11 /2020@ 1405

Sample Number: RGW257S- 200511 | Weather: SUNNY, HOT

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.75 Time: 1339 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 11 /2020 @ 1340 End Purge: Date/Time: 05/ 11 /2020 @ 1403 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
1343	19.3	168.3	1.65	6.27	16.1		8.75		
1346	22.3	184.5	1.49	6.22	10.2		8.75		
1349	23.2	187.8	1.45	6.2	10.9		8.75		
1352	23.5	191.1	1.26	6.19	12.2				
1355	23.8	193.5	1.17	6.18	13.0				
1358	23.7	195.2	1.06	6.19	14.0				
1401	23.7	197.0	1.02	6.18	14.9				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ■ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO SHEEN, NO ODOR

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	23.6	197.0	0.99	6.18	14.8				
2	23.6	197.2	0.95	6.19	15.0				
3	23.6	197.4	0.93	6.18	15.4				
4	23.5	197.3	1.04	6.19	15.3				
Average:	23.6	197.2	0.98	6.19	15.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
4	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.11.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/11 /2020@ 1401

Sample Number: RGW258S- 200511 | Weather: SUNNY

Landau Representative: JAN

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) | Damaged (NO) | Describe: Flush Mount

DTW Before Purging (ft): 6.58 | Time: 1325 | Flow through cell vol. | GW Meter No.(s): 1

Begin Purge: Date/Time: 05/ 11/2020 @ 1328 | End Purge: Date/Time: 05/ 11/2020 @ 1348 | Gallons Purged: 0.5

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**	**through cell vol.**	
1331	18.2	268.3	1.07	6.27	1.2		6.58		
1334	20.3	312.4	0.91	6.32	-13.3		6.58		
1337	20.9	319.5	0.89	6.36	-16.3		6.58		
1340	21.0	323.9	0.90	6.39	-19.1				
1343	21.0	322.8	0.85	6.41	-21.9				
1346	21.1	323.6	0.87	6.41	-22.6				
1348	20.9	323.7	0.90	6.41	-23.0				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type DED. BLADDER

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): NO COLOR, LOW TURB, NO/NS.

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	21.0	323.6	0.90	6.42	-23.1				
2	21.0	323.6	0.90	6.42	-23.1				
3	21.0	323.7	0.90	6.42	-23.1				
4	21.0	323.6	0.90	6.41	-22.8				
Average:	21.0	323.6	0.90	6.42	-23.0	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
5	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments: MSMSD Location

Signature: JAN | Date: 5/11/2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 13 /2020@ 1145

Sample Number: RGW247S- 200513 | Weather: OVERCAST, 50S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 3.56 Time: 1120 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 13 /2020 @ 1121 End Purge: Date/Time: 05/ 13 /2020 @ 1143 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1124	14.9	381.7	0.43	6.03	-1.6		3.63		
1127	15.4	384.7	0.50	6.09	-6.2		3.61		
1130	15.9	386.4	0.58	6.11	-13.2		3.59		
1133	16.1	387.7	0.62	6.16	-19.7				
1136	16.3	388.2	0.65	6.18	-24.4				
1139	16.4	388.8	0.72	6.20	-28.5				
1142	16.5	388.2	0.72	6.21	-30.7				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER - DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO ODOR, NO SHEEN, LIGHT FINES

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	16.6	388.1	0.74	6.21	-31.0				
2	16.5	388.3	0.73	6.21	-31.2				
3	16.5	388.4	0.73	6.21	-31.5				
4	16.6	388.4	0.77	6.21	-31.7				
Average:	16.6	388.3	0.74	6.21	-31.4	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
3	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.13.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 13 /2020@ 1110

Sample Number: RGW248I- 200513 | Weather: PARTY CLOUDY, 50S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 3.36 Time: 1043 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 13 /2020 @ 1045 End Purge: Date/Time: 05/ 13 /2020 @ 1107 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
1048	15.4	473.3	0.68	6.14	-6.1		3.33		
1051	15.8	484.9	0.85	6.05	-14.3		3.30		
1054	16.1	479.3	1.00	6.05	-18.8		3.28		
1057	16.4	475.9	1.08	6.08	-22.4				
1100	16.5	474.3	1.20	6.09	-24.3				
1103	16.9	473.1	1.26	6.12	-27.1				
1106	17.3	474.9	1.26	6.14	-29.3				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER - DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): SLIGHTLY CLOUDY, SLIGHT BROWN TINT, PARTICLES FLOATING, NO SHEEN, NO ODOR

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.4	475.3	1.27	6.14	-30.0				
2	17.4	475.5	1.28	6.14	-30.0				
3	17.4	475.9	1.25	6.14	-30.2				
4	17.5	476.3	1.25	6.15	-30.3				
Average:	17.4	475.8	1.26	6.14	-30.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
3	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.13.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1220

Sample Number: 10-71-MW1200512 | Weather: OVERCAST, RAIN, 60S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.24 Time: 1150 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 12 /2020 @ 1153 End Purge: Date/Time: 05/ 12 /2020 @ 1215 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		
1156	15.9	176.0	0.74	6.05	17.3		8.23		
1159	16.6	180.3	0.74	6.08	10.3		8.23		
1202	17.1	187.2	0.78	6.11	5.8		8.23		
1205	17.6	192.2	0.76	6.13	3.4				
1208	17.8	193.7	0.84	6.13	2.8				
1211	18.2	197.0	0.74	6.14	1.7				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): COLORLESS, SLIGHTLY CLOUDY, SOME LIGHT FINES, NO SHEEN, NO ODOR

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	18.3	197.8	0.72	6.14	1.4				
2	18.3	198.1	0.71	6.14	1.1				
3	18.3	198.9	0.79	6.14	1.0				
4	18.3	198.8	0.79	6.14	0.9				
Average:	18.3	198.4	0.75	6.14	1.1	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
3	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.12.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1135

Sample Number: 10-71-MW2 2005 | Weather: OVERCAST, SOME RAIN, 60S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) | Damaged (NO) | Describe: Flush Mount

DTW Before Purging (ft): 8.47 | Time: 1106 | Flow through cell vol. | GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 12 /2020 @ 1108 | End Purge: Date/Time: 05/ 12 /2020 @ 1131 | Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits	**+/- 3%**	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**	**>/= 1 flow through cell**	
1111	16.6	169.6	2.24	6.17	22.1		8.46		
1114	17.2	174.1	1.99	6.15	17.0		8.47		
1117	17.8	185.4	1.71	6.15	9.9		8.47		
1120	17.9	188.6	1.46	6.16	8.1				
1123	17.8	194.7	1.37	6.16	6.1				
1126	17.8	200.6	1.29	6.17	5.1				
1129	17.6	204.5	1.04	6.18	1.9				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATED

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORLESS, NO SHEEN, NO ODOR, SOME DARK FINES

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.6	204.9	1.05	6.18	1.8				
2	17.6	205.0	1.07	6.18	1.5				
3	17.6	205.2	1.03	6.18	1.1				
4	17.6	205.4	1.01	6.18	1.6				
Average:	17.6	205.1	1.04	6.18	1.5	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
3	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
1	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: BXM | Date: 5.12.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1305

Sample Number: 10-71-MW4 200512 | Weather: PARTLY CLOUDY, 60S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 8.26 Time: 1237 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 12 /2020 @ 1239 End Purge: Date/Time: 05/ 12 /2020 @ 1302 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits	**+/- 3%**	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**	**>/= 1 flow through cell**	
1242	17.4	189.9	1.63	6.21	28.4		8.27		
1245	18.5	199	1.59	6.22	24.1		8.28		
1248	19.5	266.1	1.51	6.24	8.0		8.28		
1251	19.9	281.2	1.35	6.27	4.0				
1254	20.1	303.9	1.33	6.28	1.0				
1257	20.4	322.6	1.06	6.29	-0.5				
1300	20.7	330.5	1.04	6.29	-1.8				

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, COLORELESS, NO SHEEN, NO ODOR, LIGHT TO GRAY COLORED FINES

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	20.7	331.3	1.05	6.29	-2.0				
2	20.7	331.7	1.04	6.29	-2.1				
3	20.7	333.0	1.01	6.29	-2.4				
4	20.8	333.3	1.08	6.29	-2.7				
Average:	20.7	332.3	1.05	6.29	-2.3	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)		
7	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐	OR ☐
2	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐	OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)		
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)		
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)		
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)		
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic		
	VOC (Boeing short list)		
	Methane Ethane Ethene Acetylene		
	others		

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.12.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 1025

Sample Number: RGW262S- 200512 | Weather: PARTLY CLOUDY, 60S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.71 Time: 951 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 12 /2020 @ 955 End Purge: Date/Time: 05/ 12 /2020 @ 1018 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits	**+/- 3%**	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**	**>/= 1 flow through cell**	
958	16.0	448.3	0.93	6.32	-22.9		5.32		
1001	16.6	452.1	0.99	6.27	-30.4		5.36		
1004	17.0	461.4	1.04	6.28	-35.4		5.44		
1007	17.4	468.2	1.01	6.29	-40.1		5.53		
1010	17.6	470.1	0.98	6.29	-39.6		5.61		

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type PERISTALTIC

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, YELLOW TINT, NO SHEEN, NO ODOR, EFFERVESCENT, SOME DARK FINES

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.6	471.0	0.85	6.28	-39.6				
2	17.6	471.3	0.82	6.28	-39.5				
3	17.6	471.9	0.80	6.28	-39.4				
4	17.5	472.0	1.01	6.28	-39.6				
Average:	17.6	471.6	0.87	6.28	-39.5	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
7	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
2	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s): Duplicate Location (DUP5)

Comments:

Signature: BXM Date: 5.12.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 800

Sample Number: RGWDUP5 200512 | Weather: PARTLY CLOUDY, 60S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.71 Time: 951 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 12 /2020 @ 955 End Purge: Date/Time: 05/12 /2020 @ 1018 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		

Duplicate to RGW262S

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type BLADDER DEDICATE

Made of: ■ Stainless Steel ■ PVC ☐ Teflon ■ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ■ Alconox Wash ☐ Tap Rinse ■ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, YELLOW TINT, NO SHEEN, NO ODOR, EFFERVESCENT, SOME DARK FINES

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	17.6	471.2	0.83	6.28	-39.5				
2	17.6	471.6	0.80	6.28	-39.5				
3	17.5	471.9	1.03	6.28	-39.4				
4	17.5	472.0	0.96	6.28	-39.8				
Average:	17.6	471.7	0.91	6.28	-39.6	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
7	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
2	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s): Duplicate to RGW262S

Comments:

Signature: BXM Date: 5.12.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@

Sample Number: RGW263S- 200512 | Weather: partly cloudy, 50s

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 6.28 Time: 835 Flow through cell vol. GW Meter No.(s)

Begin Purge: Date/Time: 05/ /2020 @ End Purge: Date/Time: 05/ /2020 @ Gallons Purged:

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Purge Goals: Stablization of Parameters for three consecutive readings within the following limits								**>/= 1 flow through cell**	
	+/- 3%	**+/- 3%**	**+/- 10%**	**+/- 0.1 units**	**+/- 10 mV**	**+/- 10%**	**< 0.3 ft**		

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ☐ Pump/Pump Type

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ☐ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ☐ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.):

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1									
2									
3									
4									
Average:	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s):

Comments: DTW only

Signature: BXM Date: 5.12.2020

LANDAU ASSOCIATES

Groundwater Low-Flow Sample Collection Form

Project Name: Boeing Renton | Project Number: 0025217.099.099

Event: May-20 | Date/Time: 05/ 12 /2020@ 915

Sample Number: RGW264S- 200512 | Weather: OVERCAST, HIGH 50S

Landau Representative: BXM

WATER LEVEL/WELL/PURGE DATA

Well Condition: Secure (YES) Damaged (NO) Describe: Flush Mount

DTW Before Purging (ft) 4.22 Time: 842 Flow through cell vol. GW Meter No.(s SLOPE 2

Begin Purge: Date/Time: 05/ 12 /2020 @ 845 End Purge: Date/Time: 05/ 12 /2020 @ 908 Gallons Purged: < 1

Purge water disposed to: ☐ 55-gal Drum ☐ Storage Tank ☐ Ground ■ Other SITE TREATMENT SYSTEM

Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goals: Stablization of Parameters for three consecutive readings within the following limits							>/= 1 flow through cell	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft		
848	16.0	661	0.60	6.06	-49.2		4.90		
851	16.0	646	0.68	6.02	-51.9		5.10		
854	16.3	636	0.84	6.04	-54.4		5.17		
857	16.8	634	1.11	6.08	-59.8		5.23		
900	17.0	644	1.39	6.10	-61.8		5.28		
903	16.8	660	1.50	6.10	-61.5		5.32		
906	16.8	662	1.56	6.11	-61.2		5.33		

SAMPLE COLLECTION DATA

Sample Collected With: ☐ Bailer ■ Pump/Pump Type PERISTALTIC

Made of: ☐ Stainless Steel ☐ PVC ☐ Teflon ☐ Polyethylene ☐ Other ■ Dedicated

Decon Procedure: ☐ Alconox Wash ☐ Tap Rinse ☐ DI Water ■ Dedicated

(By Numerical Order) ☐ Other

Sample Description (color, turbidity, odor, sheen, etc.): CLEAR, SLIGHT YELLOW TINT, NO ODOR, NO SHEEN, EFFERVESCENT

Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	16.8	661	1.56	6.12	-61.0				
2	16.9	662	1.56	6.12	-61.3				
3	16.9	666	1.56	6.12	-61.5				
4	17.1	667	1.55	6.12	-61.3				
Average:	16.9	664	1.56	6.12	-61.3	#DIV/0!			

QUANTITY	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)	
7	(8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX)	WA ☐ OR ☐
2	(8270D) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease)	WA ☐ OR ☐
	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)	
	(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)	
	(Total Cyanide) (WAD Cyanide) (Free Cyanide)	
	(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)	
	(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silic	
	VOC (Boeing short list)	
	Methane Ethane Ethene Acetylene	
	others	

Duplicate Sample No(s):

Comments:

Signature: BXM Date: 5.12.2020

Appendix C

Memo

To:	Kathleen Goodman, Project Manager	Project:	PS20203450.2020
From:	Chelsea Foster	c:	Project File
Tel:	(206) 342-1760		
Fax:	(206) 342-1761		
Date:	June 26, 2020		

Subject: Summary Data Quality Review
May 2020 Boeing Renton Groundwater Sampling
SWMU-172/174
ARI Group Number: 20E0097

This memo presents the summary data quality review of 11 primary groundwater samples, one groundwater field duplicate, and one trip blank sample collected on May 11, 2020. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology. The samples were analyzed for the following:

- Volatile organic compounds (VOCs) (cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride) by U.S. Environmental Protection Agency (EPA) Method 8260C with selected ion monitoring;
- Total organic carbon (TOC) by Standard Method 5310B; and
- Total metals (arsenic, copper, and lead) by EPA Method 6020A.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGW232S-200511	20E0097-01	all
RGW232I-200511	20E0097-02	all
RGW236S-200511	20E0097-03	all
RGW235I-200511	20E0097-04	all
RGW081S-200511	20E0097-05	all
RGW234S-200511	20E0097-06	all
RGW153S-200511	20E0097-07	all
RGW172S-200511	20E0097-08	all
RGW226S-200511	20E0097-09	all
RGW173S-200511	20E0097-10	all
RGW152S-200511	20E0097-11	all

Sample ID	Laboratory Sample ID	Requested Analyses
RGWDUP1-200511	20E0097-12	all
Trip Blanks	20E0097-13	VOCs

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA guidance documents (EPA, 2014a and b).

ARI received the samples on May 11, 2020. The temperatures of the coolers were recorded upon receipt and were below the maximum acceptable temperature of 6 degrees Celsius.

Organic analyses

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. Surrogates – Acceptable except as noted:

   The MS/MSD surrogate recovery for 1,2-Dichloroethane-d4 in data package 20E0097 slightly exceeded the upper spike recovery percentage of 129 percent, at 131 percent in the sample analyzed. The data is not qualified for use.
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable except as noted:

   The MS/MSD sample for cis-1,2-Dichloroethene in data package 20E0097 slightly exceeded the upper spike recovery percentage of 120 percent, at 124 percent in the sample analyzed. This indicates a slight positive bias in the cis-1,2-Dichloroethene analytical results for this data package. The data is not qualified for use.
6. Field Duplicates – Acceptable except as noted

   One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The project-specific control limit for field duplicate relative percent differences (RPDs) is 30 percent for concentrations greater than five times the reporting limit. The RPD is not calculated for results that are less than five times the reporting limit, as indicated on the table below by "NC." In these cases, the absolute value of the difference between the primary and duplicate result should not exceed the value of the reporting limit. The field duplicate RPDs were within the control limits.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (ng/L)	Duplicate Result (ng/L)	Reporting Limit (ng/L)	RPD (%)
RGW152S-200511/ RGWDUP1-200511	vinyl chloride	46.3	39.1	20	NC
	cis-1,2-dichloroethene	719	694	20	4
	trichloroethene	412	430	20	4
	tetrachloroethene	2,380	2,470	20	4

Abbreviations
ng/L = nanograms per liter
NC = not calculated
RPD = relative percent difference

7. Reporting Limits and Laboratory Flags – Acceptable

Inorganic analyses

Samples were analyzed for total metals and TOC. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. LCS– Acceptable
4. MS/MSD – Acceptable
5. Laboratory Duplicates – Acceptable
6. Field Duplicates – Acceptable

   One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The project-specific control limit for field duplicate RPDs is 30 percent for concentrations greater than five times the reporting limit. The RPD is not calculated for results that are less than five times the reporting limit, as indicated on the table below by "NC." In these cases, the absolute value of the difference between the primary and duplicate result should not exceed the value of the reporting limit.

Sample ID/ Field Duplicate ID	Analyte	Primary Result	Duplicate Result	Reporting Limit	RPD (%)
RGW152S-200511/ RGWDUP1-200511	TOC	2.12 mg/L	1.98 mg/L	0.50 mg/L	NC
	total arsenic	1.95 µg/L	2.21 µg/L	0.200 µg/L	13
	total copper	2.76 µg/L	3.00 µg/L	0.500 µg/L	8
	total lead	1.09 µg/L	1.18 µg/L	0.100 µg/L	8

Abbreviations:
µg/L = micrograms per liter
mg/L = milligrams per liter
NC = not calculated
RPD = relative percent difference
TOC = total organic carbon

7. Reporting Limits and Laboratory Flags – Acceptable

Overall assessment of data

The table below summarizes the data assessment. The completeness of work order number 20E0097 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte
RGW232S-200511	none
RGW232I-200511	none
RGW236S-200511	none
RGW235I-200511	none
RGW081S-200511	none
RGW234S-200511	none
RGW153S-200511	none
RGW172S-200511	none
RGW226S-200511	none
RGW173S-200511	none
RGW152S-200511	none
RGWDUP1-200511	none
Trip Blanks	none

References

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.

Memo

To:	Kathleen Goodman, Project Manager	Project:	PS20203450.2020
From:	Chelsea Foster	c:	Project File
Tel:	(206) 342-1760		
Fax:	(206) 342-1761		
Date:	June 28, 2020		

Subject: Summary Data Quality Review
May 2020 Boeing Renton Groundwater Sampling
Building 4-78/79 SWMU/AOC Group
ARI Work Order Number: 20E0115

This memo presents the summary data quality review of 16 primary groundwater samples, one field duplicate groundwater sample, and one trip blank sample collected on May 12, 2020. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology (Ecology). The samples were analyzed for the following:

- Volatile organic compounds (VOCs) (limited suite: benzene, vinyl chloride, cis-1,2-dichloroethene, and trichloroethene) by U.S. Environmental Protection Agency (EPA) Method 8260C;
- Total petroleum hydrocarbons as gasoline (TPH-G) by Ecology Method NWTPH-G; and
- Total organic carbon (TOC) by Standard Method 5310B-00.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGW243I-200512	20E0115-01	all
RGW241S-200512	20E0115-02	VOCs and TPH-G
RGW039S-200512	20E0115-03	all
RGW242I-200512	20E0115-04	VOCs and TPH-G
RGW034S-200512	20E0115-05	all
RGW244S-200512	20E0115-06	all
RGW240D-200512	20E0115-07	all
RGW143S-200512	20E0115-08	all
RGW239I-200512	20E0115-09	all
RGW238I-200512	20E0115-10	all
RGW210S-200512	20E0115-11	all
RGW237S-200512	20E0115-12	all
RGWDUP2-200512	20E0115-13	all

Sample ID	Laboratory Sample ID	Requested Analyses
RGW031S-200512	20E0115-14	all
RGW209S-200512	20E0115-15	all
RGW038S-200512	20E0115-16	all
RGW033S-20E0115	20E0115-17	all
Trip Blanks	20E0115-18	VOCs and TPH-G

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidelines (EPA, 2014a and b).

ARI received the samples on May 12, 2020. The temperatures of the coolers were recorded upon receipt and were below the maximum acceptable temperature of 6 degrees Celsius.

Organic analyses

Samples were analyzed for VOCs and TPH-G. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. Surrogates – Acceptable except as noted:

   Surrogate recoveries were outside their respective control limits for samples RGW243I-200512, RGW242I-200512, RGW034S-200512, RGW240D-200512, RGW143S-200512, RGW210S-200512, RGW237S-200512, and RGWDUP2-200512. Samples that were non-detect with high surrogate recoveries were not reanalyzed and are not qualified for use. Samples RGW034S-200512, RGW240D-200512, RGW210S-200512, and RGW237S-200512 had surrogates above or below control limits and analyte hits and were therefore reanalyzed, which resulted in surrogate recoveries within control limits. The data from the reanalysis is not qualified for use. Sample RGWDUP2-200512 had one surrogate above control limits in the initial analysis. The sample was rerun and the same surrogate remained above control limits. It is recommended that the initial analysis results for RGWDUP2-200512 be used and flagged with a "J."
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable

6. Field Duplicates – Acceptable

   One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The relative percent differences (RPDs) for the field duplicate are within the project-specific control limit of 30 percent for concentrations greater than five times the reporting limit. The RPD is not calculated for results that are less than five times the reporting limit, as indicated on the table below by "NC." In these cases, the absolute value of the difference between the primary and duplicate result should not exceed the value of the reporting limit. As shown in the table below, the field duplicate results are acceptable.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (µg/L)	Duplicate Result (µg/L)	Reporting Limit (µg/L)	RPD (%)
RGW031S-200512/ RGWDUP2-200512	vinyl chloride	0.20 U	0.20 U	0.20	NC
	cis-1,2-dichloroethene	0.40	0.40	0.20	NC
	benzene	17.6	17.6	0.20	0
	trichloroethene	0.20 U	0.20 U	0.20	NC
	TPH-G	1,880	1,790	100	5

Abbreviations
µg/L = micrograms per liter
NC = not calculated
RPD = relative percent difference
U = analyte was not detected above the reporting limit
TPH-G = total petroleum hydrocarbons as gasoline

7. Reporting Limits and Laboratory Flags – Acceptable as noted:

   The result for cis-1,2-dichloroethene in RGWDUP2-200512 was flagged with an "M" for low spectral match patterns. This result is already qualified for use and flagged with a "J" for surrogate recoveries. The result for cis-1,2-dichloroethene in RGW031S-200512 was flagged with an "M" for low spectral match patterns and will be flagged with a "J" and qualified for use. The result for the initial analysis of vinyl chloride in RGW033S-200512 was flagged with an "E" for being above the calibration range; however, the result from the reanlysis of RGW033S-200512 should be used and is not qualified.

Inorganic analyses

Samples were analyzed for TOC. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. LCS/LCSD – Acceptable
4. MS/MSD – Acceptable
5. Laboratory Duplicates – Acceptable
6. Field Duplicates – Acceptable

One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The RPDs are acceptable.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg /L)	Reporting Limit (mg /L)	RPD (%)
RGW031S-200512/ RGWDUP2-200512	TOC	13.42	13.48	0.50	<1

Abbreviations
mg/L = milligrams per liter
RPD = relative percent difference
TOC = total organic carbon

7. Reporting Limits and Laboratory Flags – Acceptable

Overall assessment of data

The table below summarizes the data assessment. The completeness of work order number 20E0115 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents identified in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
RGW243I-200512	none	none	NA	NA
RGW241S-200512	none	none	NA	NA
RGW039S-200512	none	none	NA	NA
RGW242I-200512	none	none	NA	NA
RGW034S-200512	none	none	NA	NA
RGW244S-200512	none	none	NA	NA
RGW240D-200512	none	none	NA	NA
RGW143S-200512	none	none	NA	NA
RGW239I-200512	none	none	NA	NA
RGW238I-200512	none	none	NA	NA
RGW210S-200512	none	none	NA	NA
RGW237S-200512	none	none	NA	NA
RGWDUP2-200512	cis-1,2-dichloroethene benzene	0.40 J 17.6 J	µg/L µg/L	Surrogate recoveries Surrogate recoveries
RGW031S-200512	cis-1,2-dichloroethene	0.40 J	µg/L	Laboratory flag
RGW209S-200512	none	none	NA	NA
RGW038S-200512	none	none	NA	NA

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
RGW033S-20E0115	none	none	NA	NA
Trip Blanks	none	none	NA	NA

Abbreviations
µg/L = micrograms per liter
NA = not applicable

References

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.

Memo

To:	Kathleen Goodman, Project Manager	Project:	PS20203450.2020
From:	Chelsea Foster	c:	Project File
Tel:	(206) 342-1760		
Fax:	(206) 342-1761		
Date:	June 28, 2020		

Subject: Summary Data Quality Review
May 2020 Boeing Renton Groundwater Sampling
Former Fuel Farm AOC Group
ARI Work Order Number: 20E0096

This memo presents the summary data quality review of 10 primary groundwater samples and one field duplicate collected on May 11, 2020. The samples were submitted to Analytical Resources Inc. (ARI), a Washington State Department of Ecology (Ecology)-accredited laboratory located in Tukwila, Washington. The samples were analyzed for total petroleum hydrocarbons as diesel (TPH-D), plus motor oil (TPH-O) and Jet A (TPH Jet A) ranges by Ecology Method NWTPH-Dx, both with and without silica-gel acid cleanup procedure, to determine if concentrations are affected by natural organic material.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGW211S-200511	20E0096-01 and 02	all
RGW212S-200511	20E0096-03 and 04	all
RGW224S-200511	20E0096-05 and 06	all
RGW255S-200511	20E0096-07 and 08	all
RGW256S-200511	20E0096-09 and 10	all
RGW221S-200511	20E0096-11 and 12	all
RGW257S-200511	20E0096-13 and 14	all
RGW258S-200511	20E0096-15 and 16	all
RGW184S-200511	20E0096-17 and 18	all
RGWDUP3-200511	20E0096-19 and 20	all
RGW183S-200511	20E0096-21 and 22	all

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidelines (EPA, 2014).

ARI received the samples on May 11, 2020. The temperatures of the coolers were recorded upon receipt and were less than the maximum acceptable temperature of 6 degrees Celsius.

Organic analyses

Samples were analyzed for TPH-D plus TPH-O and TPH Jet A ranges. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. Surrogates – Acceptable
4. LCS – Acceptable
5. MS/MSD – Acceptable
6. Field Duplicates – Acceptable

   One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of 5 percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The project-specific control limit for field duplicate relative percent differences (RPDs) is 30 percent for concentrations greater than five times the reporting limit. The RPD is not calculated for results that are less than five times the reporting limit, as indicated on the table below by "NC." In these cases, the absolute value of the difference between the primary and duplicate result should not exceed the value of the reporting limit. The field duplicate RPDs were within control limits, except for TPH-D with silica gel cleanup, and TPH Jet A with and without silica gel cleanup. As shown in the table below, the difference between the primary and duplicate results for TPH-D with silica gel cleanup exceeds the reporting limit. The RPD for TPH Jet A with and without silica gel cleanup exceeds 30 percent. The results for TPH-D with silica gel cleanup, and TPH Jet A both with and without silica gel cleanup, for samples RGW224S-200511 and RGWDUP3-200511 are qualified as estimated and qualified with a "J" due to the field duplicate RPD.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg/L)	Reporting Limit (mg/L)	RPD (%)
RGW224S-200511/ RGWDUP3-200511	TPH-D C12-C24 w/ SGC TPH-D C12-C24 w/o SGC	0.675 0.336	0.876 0.217	0.100	26 NC
	TPH Jet A C10-C18 w/ SGC TPH Jet A C10-C18 w/o SGC	0.918 0.796	1.38 0.481	0.100	40 49

Abbreviations
mg/L = milligrams per liter
NC = not calculated
RPD = relative percent difference
SGC = silica gel cleanup
TPH = total petroleum hydrocarbons
TPH-D = total petroleum hydrocarbons as diesel
w/ = with
w/o = without

7. Reporting Limits and Laboratory Flags – Acceptable

Overall assessment of data

The table below summarizes the data review. The completeness of ARI work order number 20E0096 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
RGW211S-200511	none	none	NA	NA
RGW212S-200511	none	none	NA	NA
RGW224S-200511	TPH-D w/ silica gel cleanup TPH Jet A w/ silica gel cleanup TPH Jet A w/o silica gel cleanup	0.336 J 0.918 J 0.796 J	mg/L	Field duplicate RPD
RGW255S-200511	none	none	NA	NA
RGW256S-200511	none	none	NA	NA
RGW221S-200511	none	none	NA	NA
RGW257S-200511	none	none	NA	NA
RGW258S-200511	none	none	NA	NA
RGW184S-200511	none	none	NA	NA
RGWDUP3-200511	TPH-D w/ silica gel cleanup TPH Jet A w/ silica gel cleanup TPH Jet A w/o silica gel cleanup	0.217 J 1.38 J 0.481 J	mg/L	Field duplicate RPD
RGW183S-200511	none	none	NA	NA

Abbreviations
J = The value is an estimate
mg/L = milligrams per liter
NA = not applicable
RPD = relative percent difference
TPH = total petroleum hydrocarbons
TPH-D = total petroleum hydrocarbons as diesel
w/ = with
w/o = without

References

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014, U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

Memo

To:	Kathleen Goodman, Project Manager	Project:	PS20203450.2020
From:	Chelsea Foster	c:	Project File
Tel:	(206) 342-1760		
Fax:	(206) 342-1761		
Date:	June 28, 2020		

Subject: Summary Data Quality Review
May 2020 Boeing Renton Groundwater Sampling
AOC-003
ARI Work Order Number: 20E0131

This memo presents the summary data quality review of two primary groundwater samples and one trip blank sample collected on May 13, 2020. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology.

Samples were analyzed for the following:

- Volatile organic compounds (VOCs) (cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride) by U.S. Environmental Protection Agency (EPA) Method 8260C with selected ion monitoring; and
- Total organic carbon (TOC) by Standard Method 5310C.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGW247S	20E0131-01	all
RGW248I	20E0131-02	all
Trip Blank	20E0131-03	VOCs

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA guidance documents (EPA, 2014a and b).

ARI received the samples on May 13, 2020. The temperature of the cooler was recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius.

Organic analyses

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. Surrogates – Acceptable
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable
6. Field Duplicates – Acceptable

   Field duplicates were not collected at this site during this sampling event. The project frequency requirement of one field duplicate for every 20 samples was achieved with field duplicate samples collected at other sites included in this sampling event
7. Reporting Limits and Laboratory Flags – Acceptable

Inorganic analyses

Samples were analyzed for TOC. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. LCS – Acceptable
4. MS/MSD – Acceptable

   Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.
5. Laboratory Duplicates – Acceptable
6. Field Duplicates – Acceptable

   Field duplicates were not collected at this site during this sampling event. The project frequency requirement of one field duplicate for every 20 samples was achieved with field duplicate samples collected at other sites included in this sampling event
7. Reporting Limits and Laboratory Flags – Acceptable

Overall assessment of data

The table below summarizes the data assessment. The completeness of work order number 20E0131 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits.

Sample ID	Qualified Analyte
RGW247S	none
RGW248I	none
Trip Blank	none

References

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.

Memo

To:	Kathleen Goodman, Project Manager	Project:	PS20203450.2020
From:	Chelsea Foster	c:	Project File
Tel:	(206) 342-1760		
Fax:	(206) 342-1761		
Date:	June 28, 2020		

Subject: Summary Data Quality Review
May 2020 Boeing Renton Groundwater Sampling
Building 10-71 Parcel
ARI Work Order Number: 20E0118

This memo presents the summary data quality review of three primary groundwater samples and one trip blank sample collected on May 12, 2020. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology. The samples were analyzed for the following:

- Volatile organic compounds (VOCs) (vinyl chloride, cis-1,2-dichloroethene, trichloroethene, and toluene) by U.S. Environmental Protection Agency (EPA) Method 8260C.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
10-71-MW2-200512	20E0118-01	VOCs
10-71-MW1-200512	20E0118-02	VOCs
10-71-MW4-200512	20E0118-03	VOCs
Trip Blank	20E0118-04	VOCs

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidelines (EPA, 2014).

ARI received the samples on May 12, 2020. The temperature of the cooler was recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius .

Organic analyses

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. Surrogates – Acceptable
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable

   Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.
6. Field Duplicates – Acceptable

   Field duplicates were not collected at this site during this sampling event. The project frequency requirement of one field duplicate for every 20 samples was achieved with field duplicate samples collected at other sites included in this sampling event.
7. Reporting Limits and Laboratory Flags – Acceptable

Overall assessment of data

The table below summarizes the data assessment. The completeness of work order number 20E0118 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data are not qualified and meet the project's data quality objectives.

Sample ID	Qualified Analyte
10-71-MW2-200512	none
10-71-MW1-200512	none
10-71-MW4-200512	none
Trip Blank	none

References

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

Memo

To:	Kathleen Goodman, Project Manager	Project:	PS20203450.2020
From:	Chelsea Foster	c:	Project File
Tel:	(206) 342-1760		
Fax:	(206) 342-1761		
Date:	June 28, 2020		

Subject: Summary Data Quality Review
May 2020 Boeing Renton Groundwater Sampling
Apron A
ARI Work Order Number: 20E0117

This memo presents the summary data quality review of two primary groundwater samples, one groundwater field duplicate, and one trip blank sample collected on May 12, 2020. The samples were submitted to Analytical Resources, Inc., (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology. The samples were analyzed for the following:

- Volatile organic compounds (VOCs) (vinyl chloride and cis-1,2-dichloroethene) by U.S. Environmental Protection Agency (EPA) Method 8260C; and
- Total organic carbon (TOC) by Standard Method 5310B.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGWDUP5-200512	20E0117-01	all
RGW262S-200512	20E0117-02	all
RGW264S-200512	20E0117-03	all
Trip Blank	20E0117-04	VOCs

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA guidance documents (EPA, 2014a and b).

ARI received the samples on May 12, 2020. The temperature of the coolers were recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius. The laboratory logged the samples with the time on the chain-of-custody and proceeded with analysis.

Organic analyses

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. Surrogates – Acceptable except as noted:

   Surrogate recoveries were above control limits for samples RGWDUP5-200512 and RGW264S-200512. The result for RGWDUP5-200512 was non-detect and therefore not rerun. RGW264S-200512 was rerun with surrogate recoveries within control limits. The data is not qualified for use.
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable

   Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.
6. Field Duplicates – Acceptable

   One field duplicate, RGWDUP5-200512, was submitted with sample RGW262S-200512. Primary and duplicate samples were analyzed for each analysis during this sampling event, meeting the project frequency requirement of 5 percent, or one for every 20 samples. Primary and duplicate results were below detection; therefore, the field duplicate relative percent difference (RPD) is not calculated for samples in this work order.
7. Reporting Limits and Laboratory Flags – Acceptable

Inorganic analyses

Samples were analyzed for TOC. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable
3. LCS – Acceptable
4. MS/MSD – Acceptable

   Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.
5. Laboratory Duplicates – Acceptable
6. Field Duplicates – Acceptable

   One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The RPDs are acceptable.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg/L)	Reporting Limit (mg/L)	RPD (%)
RGW262S-200512/ RGWDUP5-200512	TOC	32.45	33.04	5.00	2

Abbreviations
mg/L = milligrams per liter
RPD = relative percent difference
TOC = total organic carbon

7. Reporting Limits and Laboratory Flags – Acceptable

Overall assessment of data

The table below summarizes the data assessment. The completeness of work order number 20E0117 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte
RGWDUP5-200512	none
RGW262S-200512	none
RGW264S-200512	none
Trip Blank	none

References

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.

Appendix D

TABLE D-1: SWMU-168 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level [3]	Well ID [2]																							
		CPOC Area																							
		GW229S								GW230I								GW231S							
		11/7/2016	3/1/2017	8/14/2017	3/5/2018	8/13/2018	3/4/2019	8/12/2019	3/9/2020	11/7/2016	3/1/2017	8/14/2017	3/5/2018	8/13/2018	3/4/2019	8/12/2019	3/9/2020	11/7/2016	3/1/2017	8/14/2017	3/5/2018	8/13/2018	3/4/2019	8/12/2019	3/9/2020
Volatile Organic Compounds (µg/L)																									
Vinyl Chloride	0.11	0.020 U	0.020 U	0.021	0.0273	0.020 U	0.0211	0.020 U	0.020 U	0.032	0.020 U	**0.20**	0.0873	**0.14**	0.0566	**0.336**	0.087	0.020 U	0.020 U	0.020 U	0.0393	0.0326	0.0327	0.026	0.020 U

Notes:

1. **Bolded** values exceed the cleanup levels.
2. S = shallow well; I = intermediate well.
3. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations:

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
SWMU = solid waste management unit

TABLE D-2: SWMU-172 AND SWMU-174 GROUP HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3] Source Area																	
		GW152S									GW153S								
		5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020	5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	**0.348**	**0.981**	**1.7**	**0.678**	**0.655**	**0.627**	**0.530**	**0.892**	**0.719**	**0.0649**	**0.171**	**0.238**	**0.107**	**0.108**	**0.278**	**0.204**	**0.0736**	**0.0789**
Tetrachloroethene	0.02	**1.39**	**1.09**	**0.846**	**0.086**	**0.0594**	**0.176**	**0.384**	**1.12**	**2.38**	0.020 U	**0.0845**	**0.370**	0.020 U	0.020 U	**0.0544**	**0.164**	**0.024**	0.020 U
Trichloroethene	0.02	**0.226**	**0.833**	**0.223**	**0.152**	**0.157**	**0.203**	**0.145**	**0.278**	**0.412**	0.020 U	**0.241**	**0.394**	0.020 U	**0.0212**	**0.0326**	**0.131**	0.02 U	0.020 U
Vinyl Chloride	0.11	0.0972	**0.187 J**	**0.246**	**0.128**	**0.173**	0.0705	0.0366	**0.15**	0.0463	**0.313 J**	**0.248**	**0.289**	**0.333**	**0.242**	**0.153**	0.0859	**0.249**	**0.266**
Total Metals (µg/L)																			
Arsenic	1.0	**2.99 J**	**75.7**	**22.6**	**7.54**	**4.49**	**23.4**	**7.48**	**3.84**	**1.95**	**3.51**	**5.67**	**7.84**	**4.49**	**5.97**	**4.72**	**11.9**	**5.48**	**3.85**
Copper	3.5	2.86	**24.1**	**4.76**	**5.12**	2.35	**21.8**	**16.6**	**8.03**	**2.76**	1.01	2.55	**16.2**	2.00	1.25	1.58	**10.2**	3.09	1.73
Lead	1.0	**1.52 J**	**12.7**	**2.48 J**	**3.33**	**1.26**	**14.8**	**12.1**	**6.13**	**1.09**	0.207	**3.06**	0.381	0.352	0.198	0.351	**2.76**	0.712	0.372

Analyte	Current Cleanup Level[4]	Well ID[3] Downgradient Plume Area																	
		GW081S									GW172S								
		5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020	5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	**0.0311**	0.0243	**0.0327**	**0.0355**	0.025	0.0282	**0.0311**	**0.0357**	**0.041**	**0.641**	**0.129**	**0.116**	**0.111**	**0.0581**	0.027	**0.0561**	**0.305**	**0.214**
Tetrachloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.0663**	0.020 U	0.020 U	0.020 U	0.020 U	**0.0376**	0.020 U	0.020 U	**0.0451**	**0.0287**	**0.976**	**0.0625**
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.0872**	**0.0370**	0.020 U	0.020 U	0.020 U	0.020 U	**0.384**	**0.028**
Vinyl Chloride	0.11	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**1.41**	**1.24**	0.0742	**0.167**	0.0808	0.0376	0.0905	**0.209**	**0.369**
Total Metals (µg/L)																			
Arsenic	1.0	**1.63**	**2.30**	**2.20**	**2.33**	**2.49**	**2.49**	**2.69**	**1.87**	**2.03**	**5.52**	**8.84**	**7.24**	**6.52**	**7.71**	**10.6**	**20.5**	**32.8**	**7.03**
Copper	3.5	0.534	0.811	0.561	0.536	0.546	1.38	1.96	0.791	1.24	0.989	2.50 U	1.77	2.07	2.13	**3.86**	**9.25**	**27.6**	**2.2**
Lead	1.0	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.116	0.210	0.100 U	0.147	0.772	**1.02**	**1.13**	0.774	0.991	**1.02**	**7.44**	**15.1**	**1.07**

Analyte	Current Cleanup Level[4]	Well ID[3] Downgradient Plume Area																	
		GW173S									GW226S								
		5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020	3/5/2018	5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020
Volatile Organic Compounds (µg/L)																				
cis-1,2-Dichloroethene	0.03	0.020 U	**0.111**	**0.0753**	**0.0756**	**0.037**	0.022	**0.0378**	**0.0504**	**0.0488**	**0.0408**	**0.0401**	0.0262	0.020 U	**0.0387**	0.0223	0.0259	0.0235	**0.0396**	**0.0305**
Tetrachloroethene	0.02	**0.061**	**0.0301**	**0.218**	**0.0842**	**0.0416**	**0.0561**	**0.0246**	**0.0224**	0.020 U	0.020 U	0.020 U	**0.0733**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Trichloroethene	0.02	**0.0344**	**0.0681**	**0.206**	**0.149**	**0.0742**	**0.0256**	**0.0379**	**0.0305**	**0.0215**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.11	0.046	0.0969 J	0.0448 J	0.0312	0.0486	0.0613	0.072	0.144	0.126	0.0428	0.026	0.0409 J	0.0655	0.0432	0.0459	0.029	0.0615	0.038	0.0594
Total Metals (µg/L)																				
Arsenic	1.0	**1.80**	**13.0**	**4.59**	**6.72**	**7.38**	**12.2**	**15.6**	**11.8**	**6.72**	**4.14**	**3.27**	**2.78**	**3.44**	**5.07**	**2.97**	**2.85**	**12.0**	**4.88**	**3.33**
Copper	3.5	3.48	**6.95**	**3.85**	**4.38**	1.11	1.39	**4.68**	1.51	0.875	2.60	1.05	1.19	2.28	**4.55**	0.500 U	0.626	**15.6**	**5.00**	0.704
Lead	1.0	0.314	**2.88**	0.706	0.712	0.251	0.290	**1.36**	0.442	0.215	0.297	0.129	0.141	0.422	0.413	0.100 U	0.100 U	**2.43**	0.500	0.190

TABLE D-2: SWMU-172 AND SWMU-174 GROUP HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3]																
		CPOC Area																
		GW232S									GW233I							
		5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020	5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	**0.367**	**0.489**	**0.426**	**0.250**	**0.319**	**0.378**	**0.659**	**0.221**	**0.352**	**0.0598**	**0.0587**	**0.0692**	**0.075**	**0.054**	**0.0697**	**0.0546**	**0.0552**	**0.0646**
Tetrachloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	**0.0331**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.0225**	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.11	**0.419**	**0.544 J**	**0.564**	**0.242**	**0.348**	**0.412**	**0.860**	**0.264**	**0.337**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Total Metals (µg/L)																			
Arsenic	1.0	**5.36**	**6.52**	**8.01**	**5.12**	**3.96**	**6.29**	**8.09**	**2.73**	**4.71**	0.532	0.421	0.481	0.529	0.428	0.397	0.594	0.467	0.527
Copper	3.5	0.500 U	0.628	**13.3**	1.70	1.15	0.878	**3.85**	2.22	0.539	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.774	0.500 U	0.597
Lead	1.0	0.100 U	0.275	0.338	0.167	0.167	0.102	0.378	0.354	0.100 U	0.100 U	0.100 U	0.100 U	0.102	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U

Analyte	Current Cleanup Level[4]	Well ID[3]																
		CPOC Area																
		GW234S									GW235I							
		5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020	5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	**0.0672**	**0.0758**	**0.112**	**0.0869**	**0.0630**	**0.0738**	**0.0850**	**0.0984**	**0.092**	**0.166**	**0.121**	**0.158**	**0.135**	**0.109**	**0.0638**	**0.109**	**0.127**	**0.156**
Tetrachloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.0297**	0.020 U	**0.0253**	**0.0305**	**0.0338**	**0.0353**	**0.0342**	0.020 U	**0.0287**	**0.0336**	**0.031**
Vinyl Chloride	0.11	0.020 U	0.0282 J	0.0488	0.0273	0.0235	0.0252	0.0309	0.0302	0.032	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Total Metals (µg/L)																			
Arsenic	1.0	0.820	**2.07**	**1.72**	**2.11**	**2.22**	**1.31**	**10.1**	**27.4**	**5.31**	0.200 U	0.200 U	0.230	0.200 U	0.403	0.292	0.237	0.251	0.289
Copper	3.5	NA	0.748	1.27	1.75	1.93	0.869	**33.2**	**32.9**	2.43	0.500 U	0.500 U	0.500 U	0.500 U	1.58	0.714	0.573	0.935	1.08
Lead	1.0	NA	0.425	0.781	0.701	0.843	0.280	**15.5**	**11.8**	0.671	0.100 U	0.100 U	0.104	0.322	0.405	0.182	0.127	0.235	0.223

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW236S								
		5/7/2018	8/13/2018	11/12/2018	3/4/2019	5/6/2019	8/12/2019	11/11/2019	3/9/2020	5/11/2020
Volatile Organic Compounds (µg/L)										
cis-1,2-Dichloroethene	0.03	0.0297	**0.0427**	**0.0690**	**0.0443**	0.0281	**0.0468**	**0.108**	0.0241	**0.036**
Tetrachloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	**0.0206**	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.11	0.020 U	0.020 U	0.0323	0.020 U	0.020 U	0.020 U	0.0437	0.020 U	0.020 U
Total Metals (µg/L)										
Arsenic	1.0	**1.80**	**2.69**	**3.35**	**2.81**	**2.10**	**3.70**	**36.5**	**6.29**	**2.10**
Copper	3.5	2.05	0.500 U	0.924	0.919	2.17	0.893	**66.9**	**21.2**	**4.24**
Lead	1.0	**2.49**	0.874	**1.48**	**1.94**	**1.90**	**1.53**	**117**	**18.7**	**2.61**

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = The value is an estimate.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
SWMU = solid waste management unit

TABLE D-3: BUILDING 4-78/79 SWMU/AOC GROUP HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3]																										
		Source Area																										
		GW031S									GW033S									GW034S								
		5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/11/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/11/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/11/2020	5/11/2020
Volatile Organic Compounds (µg/L)																												
Benzene	0.80	**8.95**	**3.21**	**28.3 J**	**55.9**	**7.13**	**3.47**	**4.77**	**37.1**	**17.6**	**12.8**	**13.3**	**13.6**	**11.7**	**12.5**	**10.4**	**11.5**	**10.2**	**9.75**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	0.70	0.20 U	0.56 J	0.63 J	0.20 U	0.43	0.47	0.40	0.61	0.40 J	**40.7**	**1.94**	**9.35**	**0.79**	0.41	**0.78**	**2.78**	**21.4**	**39.5**	0.20 U	0.21	0.25	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.23	**1.13**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**0.40 U**	0.20 U	**1.00 U**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**0.29**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	**0.28**	**0.31 J**	0.20 U	**0.29**	**0.21**	**0.25**	0.20 U	0.20 U	**110**	**6.46**	**36.7**	**3.26**	**0.53**	**1.16**	**13.0**	**52.2**	**87.3**	**0.24**	**0.53**	**0.54**	0.20	0.20 U	**0.39**	**0.39**	0.20 U	**0.21**
Total Petroleum Hydrocarbons (µg/L)																												
TPH-G (C7-C12)	800	**917**	**1,640**	**2,010**	**4200**	**1020**	**1390**	**1540**	**2,980**	**1,880**	239	258	500 U	395	297	277	347	296	301	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

Analyte	Current Cleanup Level[4]	Well ID[3]																										
		Source Area																										
		GW039S									GW243I									GW244S								
		5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/11/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/11/2020	5/11/2020
Volatile Organic Compounds (µg/L)																												
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.20 U	0.21	0.20 U	0.20 U	0.20 U	0.20 U	**1.66**	0.34	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**3.63**	**4.64**	**2.95**	**1.73**	**1.47**	**1.77**	**0.87**	0.52	0.46
cis-1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**1.80**	0.44	0.26	0.82	**2.03**	0.37	0.20 U	0.68	**1.06**
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**0.92**	0.20 U	0.20 U	0.22	0.20 U	0.20 U	0.20 U	0.23	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**1.06**	**0.62**	**0.55**	**0.86**	**1.45**	**0.71**	**0.35**	**0.7**	**0.85**
Total Petroleum Hydrocarbons (µg/L)																												
TPH-G (C7-C12)	800	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	132	100 U	106	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

Analyte	Current Cleanup Level[4]	Well ID[3]																										
		Downgradient Plume Area																										
		GW038S									GW209S									GW210S								
		5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/11/2020	5/11/2020
Volatile Organic Compounds (µg/L)																												
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.28	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**0.21**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total Petroleum Hydrocarbons (µg/L)																												
TPH-G (C7-C12)	800	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

Analyte	Current Cleanup Level[4]	Well ID[3]																										
		CPOC Area																										
		GW143S									GW237S									GW238I								
		5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020
Volatile Organic Compounds (µg/L)																												
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**8.57**	0.43	**0.93**	**9.58**	**2.20**	0.43	0.66	**3.48**	**1.03**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	0.70	0.33	**1.82**	0.20 U	0.20 U	0.20 U	**2.20**	0.20 U	0.21	0.20 U	0.20 U	0.20 U	0.20 U	0.21	0.20 U	0.25	0.22	**1.00 U**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.23	0.20 U	**0.60**	0.20 U	0.20 U	0.20 U	**1.05**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**1.00 U**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**0.28**	**0.29**	**0.25**	0.20 U	**0.38**	**0.34**	**1.00 U**	0.20 U	0.20 U	0.20 U	**0.21**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total Petroleum Hydrocarbons (µg/L)																												
TPH-G (C7-C12)	800	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	**1,740**	499	100 U	**1,680**	100 U	329	100 U	**961**	729	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

TABLE D-3: BUILDING 4-78/79 SWMU/AOC GROUP HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3]																												
		CPOC Area																												
		GW239I									GW240D									GW241S									
		5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020	5/7/2018	8/14/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020	5/7/2018	8/13/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020
Volatile Organic Compounds (µg/L)																														
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**0.23**	**0.23**	**0.24**	**0.23**	**0.27**	**0.26**	**0.24**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total Petroleum Hydrocarbons (µg/L)																														
TPH-G (C7-C12)	800	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW242I								
		5/7/2018	8/13/2018	11/13/2018	3/5/2019	5/7/2019	8/13/2019	11/12/2019	3/10/2020	5/11/2020
Volatile Organic Compounds (µg/L)										
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Total Petroleum Hydrocarbons (µg/L)										
TPH-G (C7-C12)	800	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = The value is an estimate.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well; D = deep well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
SWMU = solid waste management unit
TPH-G = total petroleum hydrocarbons as gasoline

TABLE D-4: FORMER FUEL FARM HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3]								
		Source Area								
		GW255S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.094 U	0.095 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.094 U	0.095 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW183S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.095 U	0.096 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.110 U
Jet A	0.5	0.095 U	0.096 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.110 U

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW184S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.095 U	0.096 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.095 U	0.096 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U

Analyte	Current Cleanup Level[4]	Well ID[3]								
		Source Area								
		GW211S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.32	**0.75**	0.22	**0.903**	0.272	0.341	0.124	0.120	0.282
Jet A	0.5	0.37	**0.58**	0.24	0.245	0.214	0.191	0.117	0.117	0.267

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW212S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.12 U	0.095 U	0.094 U	0.100 U	0.100 U	0.109	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.12 U	0.095 U	0.094 U	0.100 U	0.100 U	0.108 U	0.100 U	0.100 U	0.100 U

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW221S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	**0.64**	**0.63**	**0.55**	**3.63**	**0.746**	**1.50**	**0.630**	**1.65**	**1.58**
Jet A	0.5	**0.58**	**0.52**	0.48	**2.12**	**0.635**	**0.863**	**0.397**	**1.09**	**1.09**

Analyte	Current Cleanup Level[4]	Well ID[3]								
		Source Area								
		GW224S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	**1.2**	**1.4**	**0.73**	**1.84**	**0.560**	**1.56**	**0.256**	**1.46**	**0.675**
Jet A	0.5	**2.3**	**2.2**	**1.4**	**1.97**	**0.933**	**1.64**	**0.388**	**1.80**	**0.918 J**

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW256S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.094 U	0.095 U	0.096 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.11	0.095 U	0.096 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW257S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.095 U	0.095 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.095 U	0.095 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U

Analyte	Current Cleanup Level[4]	Well ID[3]								
		CPOC Area								
		GW258S								
		5/5/2016	11/7/2016	5/10/2017	11/14/2017	5/7/2018	11/12/2018	5/7/2019	11/11/2019	5/11/2020
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	0.095 U	0.095 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.095 U	0.095 U	0.095 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

AOC = area of concern
CPOC = conditional point of compliance
mg/L = milligrams per liter
SWMU = solid waste management unit
TPH-D = total petroleum hydrocarbons as diesel

TABLE D-5: AOC-003 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID [3]															
		Source Area								Downgradient Plume Area							
		GW249S								GW188S							
		11/14/2017	3/7/2018	5/8/2018	8/15/2018	11/13/2018	3/5/2019	8/14/2019	3/12/2020	11/14/2017	3/7/2018	5/8/2018	8/15/2018	11/13/2018	3/5/2019	8/14/2019	3/12/2020
Volatile Organic Compounds (µg/L)																	
cis-1,2-Dichloroethene	0.78	NS	0.102	0.0757	0.0524	0.0829	0.079	0.0526	0.0604	NS	0.0606	0.0531	0.0386	0.0636	0.0493	0.0361	0.0362
Tetrachloroethene	0.02	NS	0.0496	0.020 U	0.020 U	0.020 U	0.0105	0.020 U	0.020 U	NS	0.020 U	0.020 U	0.020 U	0.020 U	0.0107	0.020 U	0.0244
Trichloroethene	0.16	NS	0.0475	0.0211	0.020 U	0.020 U	0.0157	0.020 U	0.020 U	NS	0.020 U	0.020 U	0.020 U	0.020 U	0.0125	0.020 U	0.020 U
Vinyl Chloride	0.24	NS	0.114	**0.428**	**0.413**	**0.629**	**0.424**	**0.367**	**0.334**	**NS**	**0.443**	**0.505**	**0.404**	**0.813**	**0.537**	**0.545**	**0.235**

Analyte	Current Cleanup Level[4]	Well ID [3]																	
		CPOC Area																	
		GW247S									GW248I								
		5/8/2018	8/15/2018	11/13/2018	3/5/2019	5/8/2019	8/14/2019	11/12/2019	3/12/2020	5/13/2020	5/8/2018	8/15/2018	########	3/5/2019	5/8/2019	8/14/2019	########	3/12/2020	5/13/2020
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.78	0.0949	0.081	0.102	0.0728	0.0584	0.065	0.0635	0.039	0.584	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.020 U
Tetrachloroethene	0.02	0.020 U	0.020 U	0.020 U	0.126	0.020 U	0.020 U	0.020 U	0.02 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Trichloroethene	0.16	0.0257	0.0291	0.0208	0.018	0.020 U	0.020 U	0.148	0.02 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.0514	0.020 U	0.020 U
Vinyl Chloride	0.24	**0.46**	**0.453**	**0.679**	**0.392**	**0.497**	**0.613**	**0.504**	**0.305**	**0.409**	**0.573**	**0.526**	**0.987**	**0.707**	**0.551**	**0.541**	**0.62**	**0.499**	**0.546**

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
SWMU = solid waste management unit

TABLE D-6: AOC-004 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[3]	Well ID [3]							
		Source Area							
		GW250S							
		11/10/2016	3/1/2017	8/17/2017	3/6/2018	8/15/2018	3/5/2019	8/14/2019	3/9/2020
Metals (mg/L)									
Lead	0.001	**0.0020**	**0.0030**	0.00026	0.000941	**0.00107**	**0.00154**	0.000714	**0.00119**

Analyte	Current Cleanup Level[3]	Well ID [3]							
		CPOC Area							
		GW174S							
		11/10/2016	3/1/2017	8/17/2017	3/6/2018	8/15/2018	3/5/2019	8/14/2019	3/9/2020
Metals (mg/L)									
Lead	0.001	**0.0013 J**	**0.0016 J**	0.0010	0.000449	0.000762	0.000815	0.000549	0.000974

Notes

1. Data qualifiers are as follows:
   J = The value is an estimate.
2. S = shallow well
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations

mg/L = milligrams per liter
AOC = area of concern
CPOC = conditional point of compliance
SWMU = solid waste management unit

TABLE D-7: AOC-060 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Levels [4]	Well ID [3]							
		Source Area							
		GW009S							
		8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020
Volatile Organic Compounds (µg/L)									
cis -1,2-Dichloroethene	0.08	**0.16**	**0.093**	**0.15**	**0.0948**	**0.126**	**0.107**	**0.127**	**0.093**
Trichloroethene	0.02	**0.032**	**0.022**	**0.033**	**0.0252**	**0.0238**	**0.0239**	0.020 U	**0.0242**
Vinyl Chloride	0.26	**0.40**	0.26	**0.39**	0.241 J	**0.318**	**0.285**	**0.300**	0.183

Analyte	Current Cleanup Levels [4]	Well ID [3]																							
		Downgradient Plume Area																							
		GW012S								GW014S								GW147S							
		8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020	8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020	8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020
Volatile Organic Compounds (µg/L)																									
cis -1,2-Dichloroethene	0.08	**5.2**	**1.6**	**0.95**	**0.609**	**1.29**	**1.23**	**0.798**	**0.482**	**0.17**	**0.13**	**0.18**	**0.134**	**0.122**	**0.119**	**0.143**	**0.151**	**16**	**0.16**	**3.0**	**0.211**	**4.63**	**0.955**	**4.11**	**0.287**
Trichloroethene	0.02	**3.0**	**0.11**	**0.098**	**0.0568**	**0.656**	**0.0546**	**0.0471**	**0.0505**	**0.025**	**0.043**	**0.039**	**0.0347**	**0.0273**	**0.0254**	0.020 U	**0.0419**	**3.6**	**1.5**	**2.6**	**1.91**	**4.23**	**0.475**	**1.46**	**1.20**
Vinyl Chloride	0.26	**2.5**	**2.0**	**1.4**	**0.586**	**0.605**	**1.35**	**0.893**	**0.603**	**0.30**	**0.30**	**0.31**	**0.266**	0.232 J	0.214	**0.365**	0.195	**3.1**	0.020 U	0.21	0.020 U	**1.07 J**	0.0514	0.215	0.020 U

Analyte	Current Cleanup Levels [4]	Well ID [3]																							
		CPOC Area																							
		GW149S								GW150S								GW252S							
		8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020	8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020	8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020
Volatile Organic Compounds (µg/L)																									
cis -1,2-Dichloroethene	0.08	0.076	0.067	0.070	0.0565	0.0441	0.0623	0.0427	0.0574	**0.10**	0.055	**0.091**	0.0388	0.0506	0.0737	**0.0824**	0.0525	0.034	0.024	0.039	0.0215	0.0266	0.020 U	0.0342	0.0259
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.022**	0.020 U	**0.026**	0.020 U	**0.0305**	0.020 U	**0.0228**	0.02 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.26	0.080	0.11	0.068	0.0854	0.0399	0.0843	0.0482	0.085	0.20	0.092	0.096	0.0596	0.0203	0.103	0.020 U	0.0541	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U

Analyte	Current Cleanup Levels [4]	Well ID [3]															
		CPOC Area															
		GW253I								GW254S							
		8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020	8/23/2016	3/6/2017	8/16/2017	3/6/2018	8/14/2018	3/5/2019	8/14/2019	3/10/2020
Volatile Organic Compounds (µg/L)																	
cis -1,2-Dichloroethene	0.08	**0.089**	**0.10**	**0.11**	**0.0991**	0.0796	**0.127**	**0.0917**	**0.0915**	**0.11**	0.062	**0.11**	0.0589	**0.0926**	**0.0983**	**0.116**	0.0736
Trichloroethene	0.02	**0.023**	**0.024**	**0.029**	0.020 U	**0.0204**	**0.0221**	0.020 U	**0.0212**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.26	0.13	0.13	0.14	0.132	0.113	0.143	0.131	0.184	0.067	0.038	0.043	0.0303	0.0418	0.0749	0.0465	0.0405

Notes:

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.

Abbreviations:

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
SWMU = solid waste management unit

TABLE D-8: AOC-090 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Levels [4]	Well ID [3]																							
		Source Area								Downgradient Plume Area															
		GW189S [5]								GW175I								GW176S							
		11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020	11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020	11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020
Volatile Organic Compounds (µg/L)																									
1,1,2,2-Tetrachloroethane	0.17	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
1,1,2-Trichloroethane	0.2	**1.00 U**	**0.40 U**	0.20 U	0.20 U	**2.00 U**	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1-Dichloroethene	0.057	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Acetone	300	25.1	10.0 U	5.0 U	5.00 U	70	5.00 U	5.0 U	5.0 U	NA	5.00 U	5.0 U	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U	NA	5.00 U	5.38	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U
Benzene	0.8	**1.00 U**	0.41	**1.69**	0.55	**2.42**	0.20	0.49	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Carbon Tetrachloride	0.23	**1.00 U**	**0.40 U**	0.20 U	0.20 U	**2.00 U**	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chloroform	2	1.00 U	0.40 U	0.20 U	0.20 U	**2.23**	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	2.4	1.16	1.18	2.23	1.74	**22.3**	0.92	**6.87**	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.25	0.34	0.26	0.27	0.25	0.27	0.25
Methylene Chloride	2	**5.00 U**	2.00 U	1.0 U	1.00 U	**10.9 UJ**	1.00 U	1.0 U	1.0 U	NA	1.00 U	1.0 U	1.00 U	1.00 U	1.00 U	1.0 U	1.0 U	NA	1.00 U	1.0 U	1.00 U	1.00 U	1.00 U	1.0 U	1.0 U
Tetrachloroethene	0.05	**0.0549**	0.020 U	0.020 U	0.020 U	**0.20 U**	0.028	0.020 U	0.0263	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Toluene	75	13.1	18.7	2.84	6.34	21.7	4.96	3.11	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.42	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	53.9	1.00 U	0.56	0.40	0.48	2.00 U	0.20 U	0.39	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.08	**0.19**	**0.156**	**0.279**	**0.224**	**2.38**	**0.156**	**0.414**	0.0745	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.13	0.020 U	**0.48**	**1.00**	**0.508 J**	**2.09 J**	**0.50**	**1.20**	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	**0.260**	**0.286**	**0.208**	**0.230**	**0.294**	**0.301**	**0.207**
Total Petroleum Hydrocarbons (µg/L)																									
TPH-G (C7-C12)	800	**2,290**	**2,260**	**2,010**	**1,860**	**9,440**	**1,070**	**943**	189	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U
TPH-D (C12-C24)	500	146	398	**689**	200	**4,120**	362	432	100 U	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U
TPH-O (C24-C40)	500	200 U	**582**	**949**	298	**2,000 U**	**522**	**853**	200 U	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U

Analyte	Current Cleanup Levels [4]	Well ID [3]																							
		Shallow Zone CPOC Area																							
		GW178S								GW180S								GW207S							
		11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020	11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020	11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020
Volatile Organic Compounds (µg/L)																									
1,1,2,2-Tetrachloroethane	0.17	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
1,1,2-Trichloroethane	0.2	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1-Dichloroethene	0.057	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.023	0.020 U	0.020 U	0.020 U
Acetone	300	NA	5.00 U	5.0 U	5.00 U	5.00 U	5.54	5.0 U	5.0 U	NA	5.00 U	5.0 U	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U	NA	5.00 U	5.0 U	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U
Benzene	0.8	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Carbon Tetrachloride	0.23	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chloroform	2	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	2.4	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.29	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Methylene Chloride	2	NA	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	NA	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	NA	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Tetrachloroethene	0.05	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Toluene	75	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	53.9	NA	0.20 U	0.26	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.08	NA	0.020 U	0.0277	0.0214	0.0213	0.0213	0.020 U	0.021	NA	0.020 U	0.026	0.020 U	0.020 U	0.020 U	0.020 U	0.0239	NA	0.020 U	0.0412	0.020 U	0.0388	0.020 U	0.0305	0.020 U
Vinyl Chloride	0.13	NA	**0.699**	**0.191**	**0.409**	**0.378**	**0.392**	**0.3840**	**0.1840**	NA	0.020 U	0.0395	0.020 U	0.020 U	0.020 U	0.0485	0.020 U	NA	0.0758	**0.2380**	0.0300	**0.311 J**	0.0692	0.020 U	0.020 U
Total Petroleum Hydrocarbons (µg/L)																									
TPH-G (C7-C12)	800	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U
TPH-D (C12-C24)	500	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U
TPH-O (C24-C40)	500	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U

TABLE D-8: AOC-090 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Levels [4]	Well ID [3]																							
		Shallow Zone CPOC Area								Intermediate Zone CPOC Area															
		GW208S								GW163I								GW165I							
		11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020	11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020	11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020
Volatile Organic Compounds (µg/L)																									
1,1,2,2-Tetrachloroethane	0.17	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
1,1,2-Trichloroethane	0.2	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1-Dichloroethene	0.057	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Acetone	300	NA	5.00 U	5.0 U	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U	NA	5.00 U	5.0 U	5.00 U	5.00 U	6.90	5.0 U	5.0 U	NA	5.00 U	5.0 U	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U
Benzene	0.8	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Carbon Tetrachloride	0.23	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chloroform	2	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	2.4	NA	0.20 U	0.23	0.20	0.20 U	0.21	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Methylene Chloride	2	NA	1.00 U	1.0 U	1.00 U	1.00 U	1.00 U	1.0 U	1.0 U	NA	1.00 U	1.0 U	1.00 U	1.00 U	1.00 U	1.0 U	1.0 U	NA	1.00 U	1.0 U	1.00 U	1.00 U	1.00 U	1.0 U	1.0 U
Tetrachloroethene	0.05	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Toluene	75	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	53.9	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.08	NA	0.020 U	0.0281	0.020 U	0.0234	0.020 U	0.0293	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.13	NA	**0.565**	**0.330**	**0.388**	0.097	**0.437**	**0.245**	**0.419**	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Total Petroleum Hydrocarbons (µg/L)																									
TPH-G (C7-C12)	800	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U
TPH-D (C12-C24)	500	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U
TPH-O (C24-C40)	500	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U

Analyte	Current Cleanup Levels [4]	Well ID [3]															
		Intermediate Zone CPOC Area															
		GW177I								GW179I							
		11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020	11/8/2016	3/2/2017	8/15/2017	3/5/2018	8/13/2018	3/5/2019	8/12/2019	3/11/2020
Volatile Organic Compounds (µg/L)																	
1,1,2,2-Tetrachloroethane	0.17	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
1,1,2-Trichloroethane	0.2	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1-Dichloroethene	0.057	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Acetone	300	NA	5.00 U	7.08	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U	NA	5.00 U	5.0 U	5.00 U	5.00 U	7.16	5.0 U	5.0 U
Benzene	0.8	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Carbon Tetrachloride	0.23	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chloroform	2	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,2-Dichloroethene	2.4	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Methylene Chloride	2	NA	1.00 U	1.0 U	1.00 U	1.00 U	1.00 U	1.0 U	1.0 U	NA	1.00 U	1.0 U	1.00 U	1.00 U	1.00 U	1.0 U	1.0 U
Tetrachloroethene	0.05	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Toluene	75	NA	0.20 U	0.20 U	0.25	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	53.9	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichloroethene	0.08	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	NA	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Vinyl Chloride	0.13	NA	**0.1820**	0.0871	0.0454	0.0303	0.0573	0.0339	0.020 U	NA	0.0632	0.020 U	0.0332	0.020 U	**0.1330**	0.0368	0.020 U
Total Petroleum Hydrocarbons (µg/L)																	
TPH-G (C7-C12)	800	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 U	100 U	100 U
TPH-D (C12-C24)	500	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U	NA	100 U	100 U	100 U	100 U	100 UJ	100 U	100 U
TPH-O (C24-C40)	500	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U	NA	200 U	200 U	200 U	200 U	200 UJ	200 U	200 U

Notes:

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = The value is an estimate.
   UJ = The analyte was not detected at the estimated reporting limit indicated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Current cleanup levels obtained from Table 2 of the Cleanup Action Plan and are based on each individual SWMU or AOC.
5. GW189S is the replacement well for GW168S.

Abbreviations:

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
NA = well not available for sampling
SWMU = solid waste management unit
TPH-D = total petroleum hydrocarbons as diesel
TPH-G = total petroleum hydrocarbons as gasoline
TPH-O = total petroleum hydrocarbons as oil

Appendix E

APPENDIX E

Summary of Remedial Actions at the Boeing Renton Facility
April - June 2020

Boeing Renton Site
Renton, Washington

Prepared for:
The Boeing Company
EHS Remediation

Prepared by:
CALIBRE Systems, Inc.
Project No. T0014323

August 15, 2020

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Acronyms

AOC	Area of Concern
Building 4-78/79	Building 4-78/4-79 SWMU/AOC Group
CALIBRE	CALIBRE Systems, Inc.
CMP	Compliance Monitoring Plan
EDR	Engineering Design Report
ERD	Enhanced Reductive Dechlorination
GAC	granular activated carbon
mg/L	milligrams per liter
PCE	Tetrachloroethene
PID	Photoionization detector
SVE	Soil Vapor Extraction
SWMU	Solid Waste Management Unit
TCE	Trichloroethene
Tech Memo	Technical Memorandum
VOCs	Volatile Organic Compounds
VPC	Vapor Phase Carbon

1.0 Introduction

CALIBRE Systems, Inc. (CALIBRE) prepared this Technical Memorandum (Tech Memo) for the Boeing Company to summarize remedial actions implemented at the Boeing Renton Facility in the second quarter of 2020 (between April 1 and June 30, 2020). The ongoing remedial actions include:

1. Operation of one soil vapor extraction (SVE) system located at Solid Waste Management Unit (SWMU) designated as SWMU-172/174;
2. Biological treatment to promote Enhanced Reductive Dechlorination (ERD) of volatile organic compounds (VOCs) in groundwater underway at several areas of concern (AOCs) located throughout the Renton Facility, and;
3. Anaerobic biodegradation of benzene by nitrate/sulfate injections at the 4-78/79 Building.

CALIBRE completed the work described in this Tech Memo to support remedial activities described in the Engineering Design Report (EDR), (AMEC, 2014) as supplemented by a Tech Memo describing the remedial approach for *in situ* biodegradation treatment of benzene in groundwater near the 4-78/79 Building (CALIBRE 2017).

1.1 Facility Location and Background

The Boeing Renton Facility is used for assembly of 737 airplanes and is located at the southern end of Lake Washington in Renton, Washington. The location of the Renton Facility and the location of SWMU-172/174 within the Facility is shown on Figure 1-1. The locations of the other AOCs and SWMUs where groundwater treatment is ongoing are also presented in Figure 1-1.

1.2 Objectives and Organization

The objective for this Tech Memo is to summarize work completed in accordance with the EDR in the second quarter of 2020. This includes operation and monitoring activities for the SVE system located at SWMU-172/174 and a summary of the ongoing biological treatment and monitoring of groundwater at the following areas:

SWMU-172/174
Building 4-78/4-79 SWMU/AOC Group (Building 4-78/79)
AOC-001/002
AOC-003
Lot 20/Former Building 10-71
AOC-060
AOC-090
Building 4-70, and
Apron A

This Tech Memo is organized as follows:
Section 1 – Introduction and Background

Section 2 – SVE System Operation and Monitoring
Section 3 – Groundwater Treatment
Section 4 – Conclusions and Recommendations
Section 5 – References
Attachment A – Field Data Sheets

2.0 SVE Systems Operation and Monitoring

SVE systems were installed in the Building 4-78/79 and SWMU-172/174 areas and began operation in April 2015. During the last quarter of 2017 photoionization detector (PID) results from both systems had shown low-level VOC concentrations removed at asymptotically low levels. Rebound tests were conducted in early 2018 followed by collection of soil confirmation samples from both areas in June 2018. Ecology approved the recommended shutdown of the Building 4-78/79 SVE system on November 1, 2018 after review and evaluation of the soil confirmation results for that area (CALIBRE 2018a). Operational modifications have continued at the SWMU-172/174 SVE system to optimize VOC removal for that area. The following sections summarize the operating conditions, operational changes, and performance monitoring/evaluation for the SWMU-172/174 SVE system performed in the second quarter 2020 (April to June 2020).

2.1 SWMU-172/174 SVE System

The SWMU-172/174 SVE system consists of three vapor extraction wells and a SVE equipment trailer as shown in Figure 2-1. The SVE system is equipped with two vapor-phase granular activated carbon (GAC) vessels, each filled with 1,800 pounds of carbon. The GAC vapor treatment system is configured to run in a lead-lag configuration with vapor from the outlet of the lead vessel passing through the lag vessel. The system historically included two smaller vessels each containing 200 pounds of zeolite impregnated with permanganate for vinyl chloride treatment. Permanganate treatment was originally included in the design to treat potential vinyl chloride that would not be captured in GAC. Monitoring data has demonstrated that vinyl chloride is not present in the inlet air stream and permanganate treatment is not required or providing any benefit and may be discontinued in the future. The lag permanganate drum became plugged during the fourth quarter 2019 and was taken offline. The lead permanganate drum is still operating within the treatment system.

Routine maintenance including oil changes, drive-belt tensioning and inspection, inspection of the air filter, and inspection of the moisture separator was completed per the Operations Manual (CALIBRE, 2014). System monitoring includes regular monitoring of total organic vapor concentrations with a calibrated PID.

2.1.1 TO-15 Laboratory Analysis of Vapor Samples

A total of six samples for TO-15 analysis were collected during this operating period. The results showed tetrachloroethene (PCE) represented approximately 85% of the total VOCs for the SWMU-172/174 SVE system influent, SVE-2 and SVE-3 samples after one hour of operation after system startup. The results after 48 hours of operation showed a small decrease in PCE at each sample location and an increase in trichloroethene (TCE) at the system influent and SVE-3. PCE represented 34% and 53% of the total VOCs for

the system influent and SVE-3 samples, respectively. Table 2-1 summarizes the TO-15 detections for the SWMU-172/174 SVE system for 16 TO-15 sampling events[1] that have been implemented since system startup. The samples were analyzed by EuroFins Air Toxics and the laboratory report is included in Attachment B.

2.1.2 Summary of Operations and Operational Changes

The soil confirmation samples collected in the second quarter of 2018 identified a location between SVE-2 and SVE-3 which still showed detectable PCE levels in soil. During subsequent reporting periods, the SVE system has been adjusted to alter the flushing pattern through this area by using SVE-3 as an inlet vent well with continued extraction through SVE-2 and SVE-1 or using SVE-1 as an inlet vent well with continued extraction through SVE-2 and SVE-3. Vapor concentrations, measured with a PID, are monitored following these adjustments and additional modifications to alter the flushing pattern are made when vapor concentrations reduce to previous low level detections.

During this reporting period, second quarter 2020, the system operated with SVE-1 as an air inlet well with extraction at SVE-2 and SVE-3. Table 2-2 shows the PID readings for the wells in the SWMU 172/174 SVE system. Table 2-3 shows an operational summary for the system.

A brief summary of key changes/events associated with operation of the SWMU 172/174 SVE system is presented below; specific details are only included for weeks when system changes and modifications were implemented. More details on weekly operations are summarized in Table 2-2 and the operational logs included in Attachment A.

- During the previous operating period, March 13, 2020, the system was turned off in response to health and safety concerns related to COVID-19 and the need to regularly inspect the site and system. The system was restarted on May 19, 2020 after the Washington State Stay-at-Home Order was lifted.
- The system downtime between March 2020 and May 2020 was used as a rebound test/rest period and samples were collected for TO-15 analysis upon system startup in May 2020. Three samples were collected after approximately one hour of operation on May 19, 2020, from the system influent, SVE-2 and SVE-3. No significant change in PID measurements were observed after approximately three hours of operation therefore subsequent samples were collected following two days of operation at the system influent, SVE-2 and SVE-3.

2.1.3 Mass Removal Estimate

Between April 17, 2015 and June 30, 2020 the SWMU-172/174 SVE system has recovered an estimated 20.6 pounds of VOCs (primarily PCE), as shown in Table 2-3. Approximately 0.69 pounds of VOCs were removed

[1] Multiple changes to SVE system operations have been implemented over the period where data are shown. Changes to extraction flow rates by SVE wells are used to maximize the VOC mass removal and the corresponding SVE influent concentration is highly dependent on the flow rate from selected wells.

during the current reporting period (second quarter 2020) based on the TO-15 measurements collected while the system was operating. It is likely the PID is picking up other vapors from the paint shop in the 5-09 building; the area around the 5-09 building can at times have a noticeable paint odor. The cumulative VOC mass removal for the SWMU-172/174 SVE system is shown in Figure 2-2.

2.2 Recommended Next Steps for the SVE Systems

TO-15 results in May 2019 at the SWMU-172/174 SVE system showed VOC concentrations had rebounded during the shutdown time (from COVID-19 restrictions), compared to previous TO-15 results in June 2019. After a month and a half of operation (early July 2020), influent PID measurements have declined but remain elevated above prior low-level concentrations.

If concentrations reduce to asymptotic levels the system will be modified to alternate flows between wells as has been done in the past (i.e. SVE-3 is extracting and will be changed to an inlet vent and vice versa for SVE-1). Summa can samples for TO-15 analysis will be planned for the third quarter 2020 to monitor changes in vapor concentrations if observed.

Additional modifications to the operation of this system should be considered to continue increased mass removal in the area between SVE-2 and SVE-3. These modifications may include opening SVE-1 and SVE-3 as an inlet vent or SVE-1 and SVE-2 as an inlet vent, to focus vapor removal in that area. It may also be beneficial to operate the SVE system in a pulsed mode in order to allow vapor concentrations to rebound followed by running the system for a period of time.

3.0 Ongoing Groundwater Treatment

Groundwater treatment is being implemented at several AOCs/SWMUs at the Renton Facility. The primary remedy being implemented is ERD of chlorinated solvents in targeted areas. The ERD treatment involves substrate injection using sucrose as a carbon source to stimulate biological degradation of the chlorinated solvents.

Beginning in late 2017, anaerobic biodegradation of benzene using nitrate and sulfate injections was implemented for a small area at the 4-78/79 Building. Boeing has continued additional nitrate/sulfate injections in the area; the most recent injection was completed in January 2020 (seventh event) with a target concentration of 1,600 mg/L for nitrate and 800 mg/L for sulfate per well (double what was injected in Dec 2018 and Mar 2019) to provide additional nitrate and sulfate to the impacted area. Additional nitrate/sulfate injections in this area are recommended for the third quarter 2020 with injections performed at the same wells used previously (B78-11, B78-13, B78-17, B78-18, B78-19, B78-20, and B78-21). Performance monitoring data will be planned for collection approximately 30 days after the injection event.

Site-wide groundwater sampling was conducted as part of the quarterly monitoring program during this reporting period and the results are discussed in the main text of the quarterly report. Table 3-1 presents a summary of those groundwater monitoring results, by area, related to groundwater treatment/ERD

implementation, with recommendations for additional substrate injections at selected areas including SWMU-172/174, Building 4-78/79, AOC-060, AOC-090, AOC-003, and Apron A. Table 3-2 includes a list of wells by area proposed for injections.

4.0 Conclusions and Recommendations

SVE operations at the SWMU-172/174 were re-started during this reporting period following the planned shut down in response to the on-going COVID-19 virus and the Governor's Stay-at-Home Order. The system down time was equivalent to a rebound rest period and, upon system restart, samples for TO-15 analysis were collected from the SVE system. Those results showed VOC concentrations had rebounded during the down time, compared to the prior TO-15 influent sample in June 2019. Additional modifications to increase flushing between extraction wells SVE-2 and SVE-3, based on the elevated PCE detections observed during the soil confirmation sampling event in the second quarter of 2018, may be considered.

Groundwater monitoring will continue in accordance with the EDR and approved updates to the Compliance Monitoring Plan (CMP), with supplemental VOC and TOC sampling at selected wells.

Additional nitrate/sulfate injections are recommended for the benzene treatment area at the 4-78/79 Building area and substrate injections for ERD treatment are also recommended at selected wells at the SWMU-172/174, 4-78/79 Building area, AOC-060, AOC-090, AOC-003, and Apron A areas.

5.0 References

AMEC 2014. Draft Engineering Design Report Boeing Renton Cleanup Action Plan Implementation. Prepared by AMEC Environment & Infrastructure, Inc. for The Boeing Company. July 2014.

CALIBRE 2014. Operations and Maintenance Plan for the Renton Cleanup Action Soil Vapor Extraction Systems. Prepared by CALIBRE Systems, Inc. for The Boeing Company, EHS Remediation. July 2014.

CALIBRE 2017. Bioremediation of Benzene in Groundwater; Building 4-78/79 Area, Boeing Renton Facility Rev. 1. Prepared by CALIBRE Systems, Inc. for The Boeing Company, EHS Remediation. September 2017.

CALIBRE 2018a. Recommendation to shut down SVE system at Building 4-78/4-79 SWMU/AOC Group; Boeing Renton Site. Prepared by CALIBRE Systems, Inc. for The Boeing Company, EHS Remediation. October 2018.

CALIBRE 2018b. Plan for Evaluation of Soils around Probe PP13 at Building 4-78/4-79 SWMU/AOC Group; Boeing Renton Site. Prepared by CALIBRE Systems, Inc. for The Boeing Company, EHS Remediation. November 2018.

Ecology 2015. Washington State Water Quality Standards: Human Health Criteria and Implementation Tools. Prepared by the Washington Department of Ecology. Publication no. 14-10-058. January 2015.

USACE 2002. Engineering and Design - Soil Vapor Extraction and Bioventing. Prepared by US Army Corps of Engineers. EM 1110-1-4001. June 2002.

Wood 2019. Quarterly report, third quarter 2019. RCRA Corrective Action Program Boeing Renton Facility. Prepared by Wood and CALIBRE Systems, Inc. for the Boeing Company, EHS Remediation. November 2019.

TABLES

Table 2-1 TO-15 Analytical Results - SWMU-172/174 SVE System Project History

SVE System Inlet

Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Total Chlorinated	Total VOCs
4/17/2015	1,500	130	120	ND	ND	13	ND	ND	ND	ND	ND	ND	ND	ND	1,763	1,763
10/13/2015	400	31	13	ND	ND	3.3	ND	ND	ND	ND	ND	ND	ND	ND	447	447
3/8/2016	82	5.4	3.1	ND	ND	ND	ND	ND	1.1	2.2	ND	ND	ND	ND	91	94
6/30/2016	230	18	10	ND	ND	1.8	ND	11	ND	ND	2.4	ND	ND	ND	260	273
9/12/2016	230	16	8.3	ND	ND	1.9	ND	ND	ND	ND	1.2	ND	ND	ND	256	257
12/14/2016	100	6.2	3.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	110
5/30/2017 - 30 min	520	220	17	ND	ND	13	2.7	ND	ND	ND	ND	ND	ND	ND	773	773
5/30/2017 - 100 min	530	200	17	ND	ND	14	ND	ND	ND	ND	ND	ND	ND	ND	761	761
5/30/2017 - 225 min	510	130	16	ND	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	668	668
8/16/2017	180	16	7.8	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	206	206
12/8/2017 - Rebound Start	99	7.6	3.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	110
5/22/2018	430	43	13	ND	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	498	498
6/7/2018	160	13	5.4	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	180	180
6/20/2018	170	14	5.7	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	192	192
8/30/2018	110	8.6	3.7	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	122	122
2/13/2019	32	2.2	1.6	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	36	36
6/20/2019	74	6.2	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	84	84
5/19/20 - Rebound Start	150	17	5.7	ND	ND	4	ND	ND	ND	ND	ND	ND	ND	ND	177	177
5/21/20 - Rebound 48 Hrs	120	230	5	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	358	358

SVE-1

Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Total Chlorinated	Total VOCs
6/20/2019	10	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	11

SVE-2

Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Total Chlorinated	Total VOCs
8/30/2018	180	14	6.1	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	200	200
2/13/2019	48	3.3	2.8	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	54	54
6/20/2019	100	9.6	5.1	ND	ND	1.4	ND	ND	1.4	ND	ND	ND	ND	ND	116	118
5/19/20 - Rebound Start	28	3.8	1.4	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND	ND	35	35
5/21/20 - Rebound 48 Hrs	20	3.4	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	26	26

Table 2-1 TO-15 Analytical Results - SWMU-172/174 SVE System Project History

SVE-3

Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Total Chlorinated	Total VOCs
5/30/2017 - 30 min	540	51	18	ND	ND	14	2.6	ND	2.2	ND	ND	ND	ND	ND	626	628
5/30/2017 - 100 min	200	16	6.5	ND	ND	5.5	ND	ND	ND	ND	ND	ND	ND	ND	228	228
8/16/2017	350	30	15	ND	ND	3.5	ND	ND	ND	ND	1.3	ND	ND	ND	399	400
12/8/2017 - Rebound Start	170	13	5.8	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	191	191
1/19/2018 - 35-Day 60 Minute Sample	310	30	13	ND	ND	6.9	1.3	ND	ND	ND	1.1	ND	ND	ND	361	362
1/19/2018 - 35-Day 180 Minute Sample	310	28	12	ND	ND	7.9	1.1	ND	ND	ND	1.1	ND	ND	ND	359	360
3/6/2018 - 80-Day 60 Min Sample	440	41	15	ND	ND	14	2.2	ND	ND	ND	ND	ND	ND	ND	512	512
3/6/2018 - 80-Day 180 Min Sample	410	33	13	ND	ND	13	1.6	ND	ND	ND	ND	ND	ND	ND	471	471
5/22/2018	790	66	22	ND	ND	22	ND	ND	ND	ND	ND	ND	ND	ND	900	900
6/7/2018	280	23	9.6	ND	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	316	316
6/20/2018	310	24	11	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND	348	348
5/19/20 - Rebound Start	350	49	14	ND	ND	10	2.0	ND	ND	ND	ND	ND	ND	ND	425	425
5/21/20 - Rebound 48 Hrs	290	240	9.8	ND	ND	5.9	ND	ND	ND	ND	ND	ND	ND	ND	546	546

VPC Outlet

Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Total Chlorinated	Total VOCs
4/17/2015	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.1	5.1
10/13/2015	ND	ND	ND	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	11
3/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6/30/2016	ND	ND	ND	ND	ND	ND	ND	ND	15	1.6	ND	1.2	6.2	1.2	ND	25
9/12/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/14/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8/16/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All results are in parts per billion by volume (ppbv).

ND = non-detect

NA = not analyzed

DCE = Dichloroethene

PCE = tetrachloroethene

TCE = trichloroethene

Total Chlorinated = the sum of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, and 1,1-DCA.

Shaded cells are results from 2nd Quarter 2020.

Table 2-2 PID Monitoring - SWMU-172/174 SVE System

Date	Days in Operation Since Startup [1]	SVE-01	SVE-02	SVE-03	VPC Inlet	VPC Mid	VPC Outlet	Notes
3/13/2020	1,629	Vent						System shut down in response to COVID-19 and Boeing limited access.
5/19/2020	1,629	Vent	368	9,021	6,456			Reconfigure carbon hoses to operate system (was set up to dry carbon in vessel). Turn system on, adjust air intake, recycle valve and close bleed valve. Readings at 0850
5/19/2020	1,629	Vent	836	10,410	6,188			Readings at 0930. Collected TO-15 samples from Influent, SVE-2, and SVE-3 ~ 60 min after startup.
5/19/2020	1,629	Vent	1,036	10,300	6,410			Readings at 1120. No significant change in PID after ~ 180 min of operation. Will collect additional TO-15 samples in two days.
5/21/2020	1,631	Vent	504	4,324	3,159			Onsite to collect additional TO-15 samples from Influent, SVE-2, SVE-3 to monitor rebound.
6/11/2020	1,652	Vent	2,512	9,951	7,521			
7/2/2020	1,673	Vent	742	2,414	1,720		0	Changed blower oil

Notes:

[1] Days in operation since system startup on April 17, 2015.

Operational change was made on 6/20/19. Due to reduced concentrations observed at SVE-1 and the influent, SVE-01 was opened as a vent well to promote focused flow towards SVE-02 and SVE-03.

Blank cells - Not all wells were measured with the PID during each sampling event.

Table 2-3 VOC Mass Removal Estimate - SWMU 172/174 SVE System

Date	Average TO-15 Total CVOCs May 2020 (ppbv)[1]	System Flow (cfm)	Cumulative Runtime Hours	VOCs removed in Operating Period Between Monitoring Events (lbs)	Cumulative VOC Mass Removed Since Start of SVE Operations in April, 2015 (lbs)
5/19/2020	267	105	31,281	0.000	19.94
5/21/2020	267	105	31,329	0.033	19.97
6/11/2020	267	100	31,832	0.326	20.30
7/2/2020	267	100	32,335	0.326	20.62

Notes:

PID = photoionization detector

ppbv = parts per billion by volume

cfm = cubic feet per minute

lbs = pounds

[1] VOC mass calculated in 2nd Quarter 2020 is based on the average of the total VOCs detected in the May 2020 TO-15 samples from the system influent. The paired PID readings are significantly higher than the laboratory results and if used, would overestimate the mass removal.

Table 3-1 Groundwater Monitoring Results Summary May 2020 and Recommended ERD Treatment

GW Treatment Area	Source and down gradient MWs	CPOC wells	Treatment IWs	ERD Treatment Recommendation
SWMU-172/174	PCE at or less than 2.5 ug/L; TCE less than 0.43 ug/L; cisDCE less than 0.72 ug/L and VC less than 0.37 ug/L.	All detections are at or below 0.35 ug/L	*Prior data Mar 2018, North and South IWS showed total CVOCs range from 0.03 ug/L to 6.90 ug/L. TOC near background.*	**Detections are low throughout the site, but have increased in the source area, GW152S. Additional injections are beneficial to maintain aggressive treatment strategy.**
Building 4-78/4-79 SWMU/AOC Group	TCE is non-detect, cisDCE is less than 1.06 ug/L and VC is less than 0.85 ug/L at all but GW033S with cisDCE at 39.5 ug/L and VC at 87.3 ug/L. One central well (GW033S) continues to show total CVOCs remain reduced from Nov 2017 results of 1,430 ug/L but have increased from prior quarter. Recent data show 15.8 ug/L in Nov 2019 and 73.4 ug/L in Mar 2020. Substrate was applied to this area after Mar 2019 sampling. Benzene decreased at source well GW031S (38.5 ug/L in Mar 2020 to 17.6 ug/L in May 2020). Nitrate/sulfate injections last completed in January 2020.	Majority of detections are ND; Northern well GW237S showed benzene decrease from 3.48 ug/L in Mar 2020 to 1.03 in May 2020.	*Prior data May 2017, 4 of 5 wells with low detections where sum of CVOCs are less than 3 ug/L*	**CVOC detections have increased at source well GW033S. Recommend substrate injection in selected IWs/areas around GW033S.** **Additional nitrate/sulfate injections recommended for the area around GW-031S.**
AOC-001/002	*Prior data Mar 2020: Source MW: TCE is 0.03 ug/L, cisDCE is 0.49 ug/L and VC is 0.27 ug/L.*	*Prior data Aug 2019: All detections below 0.30 ug/L.*	*Prior data Mar 2018, detections at or below 0.30 ug/L.*	**Detections are very low throughout the site. Will consider additional injections if beneficial. Site still not accessible due to construction**
AOC-003	*Prior data Mar 2020: All detections are less than 0.33 ug/L.*	PCE and TCE are ND, cisDCE and VC detections are less than 0.58 ug/L.	*Prior data May 2017 one of four IWs sampled – VC detection less than 0.30 ug/L*	**Detections are very low throughout the site. Additional injections are recommended to maintain aggressive treatment strategy.**
Lot 20 / former 10-71	All wells are ND.	-	-	**No action at this time.**
AOC-60	*Not sampled May 2020. Prior data March 2020, total CVOCS less than 0.41 ug/L; treatment MWs with total CVOCs less than 1.5 ug/L.*	*Prior data March 2020, MW's with total CVOCs less than 0.30 ug/L.*	-	**Detections are very low throughout the site. Additional injections are recommended to maintain aggressive treatment strategy.**
AOC – 90	*Not sampled May 2020. Prior data March 2020, source with total CVOCs at 0.10 ug/L; down gradient wells less than 0.46 ug/L total CVOCs.*	*Prior data March 2020, detections less than 0.42 ug/L.*	-	**Detections are very low throughout the site. Additional injections are recommended to maintain aggressive treatment strategy.**
Apron A	GW262S ND; GW264S with VC at 1.48 ug/L.	-	-	**Detections are very low throughout the site. Additional injections are recommended to maintain aggressive treatment strategy.**
Building 4-70	-	*Prior data March 2020, total CVOCs less than 0.63 ug/L.*	-	**Detections are very low throughout the site. Will consider additional injections if beneficial.**

Table 3-2 - Injection Proposal at Renton AOCs

Area	Injection Well	Injection Type
SWMU-172/174	B172-01	Sucrose for ERD
	B172-02	Sucrose for ERD
	B172-03	Sucrose for ERD
	B172-04	Sucrose for ERD
	B172-05	Sucrose for ERD
	B172-06	Sucrose for ERD
	B172-07	Sucrose for ERD
	B172-08	Sucrose for ERD
	B172-09	Sucrose for ERD
	B172-10	Sucrose for ERD
	B172-11	Sucrose for ERD
	B172-12	Sucrose for ERD
	B172-13	Sucrose for ERD
	B172-14	Sucrose for ERD
Building 4-78/79	B78-12	Sucrose for ERD
	B78-14	Sucrose for ERD
	B78-15	Sucrose for ERD
	B78-16	Sucrose for ERD
	B78-11	Nitrate/Sulfate for benzene treatment
	B78-13	Nitrate/Sulfate for benzene treatment
	B78-17	Nitrate/Sulfate for benzene treatment
	B78-18	Nitrate/Sulfate for benzene treatment
	B78-19	Nitrate/Sulfate for benzene treatment
	B78-20	Nitrate/Sulfate for benzene treatment
	B78-21	Nitrate/Sulfate for benzene treatment
AOC-060	GW012S	Sucrose for ERD
	GW147S	Sucrose for ERD
AOC-090	IPR3	Sucrose for ERD
	IPR4	Sucrose for ERD
	GW 189S	Sucrose for ERD
Apron A	GW 263S	Sucrose for ERD
	GW 264S	Sucrose for ERD
	GW 265S	Sucrose for ERD
AOC-003	B003-01	Sucrose for ERD
	B003-02	Sucrose for ERD
	B003-03	Sucrose for ERD
	B003-04	Sucrose for ERD

FIGURES

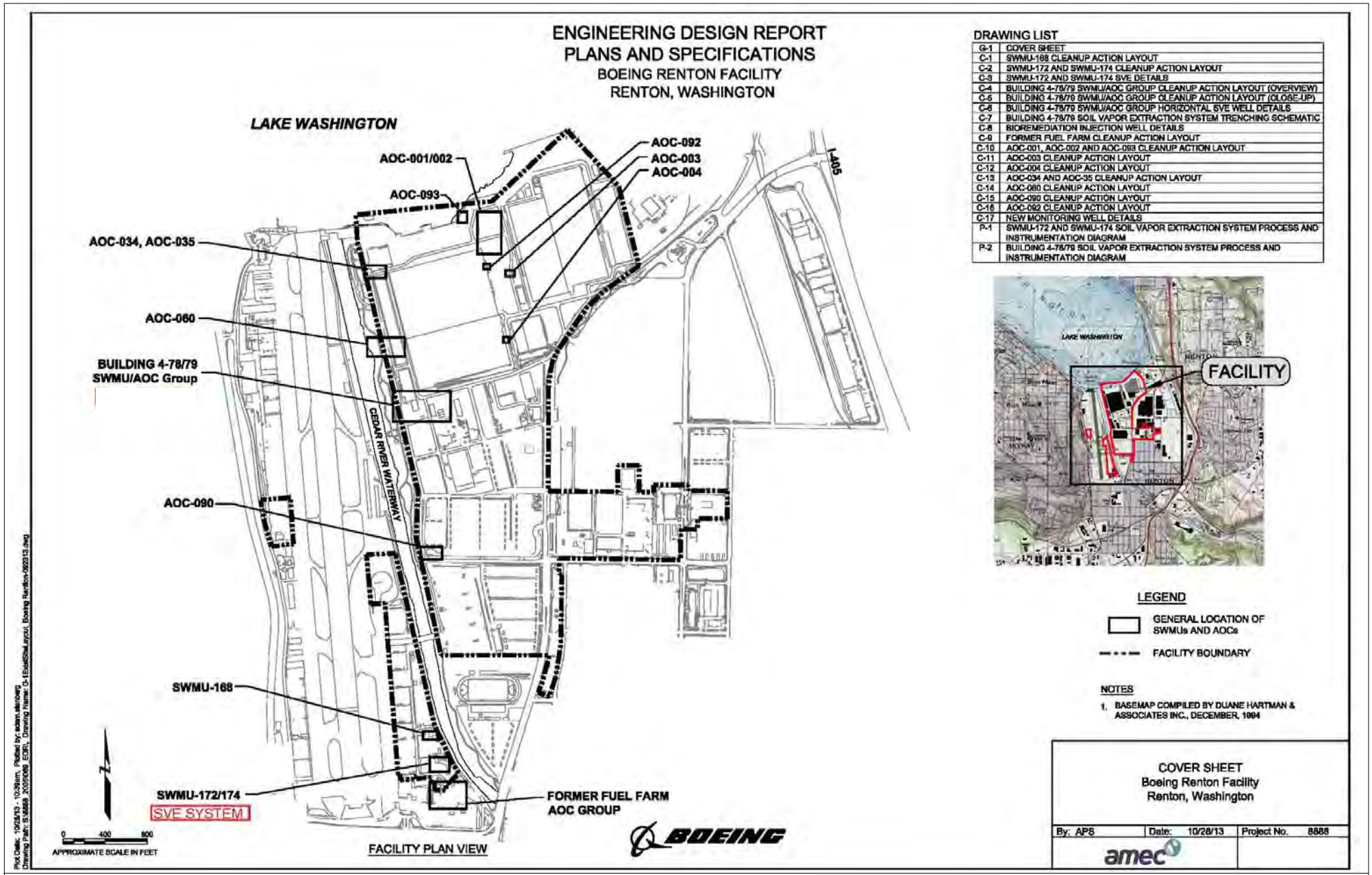

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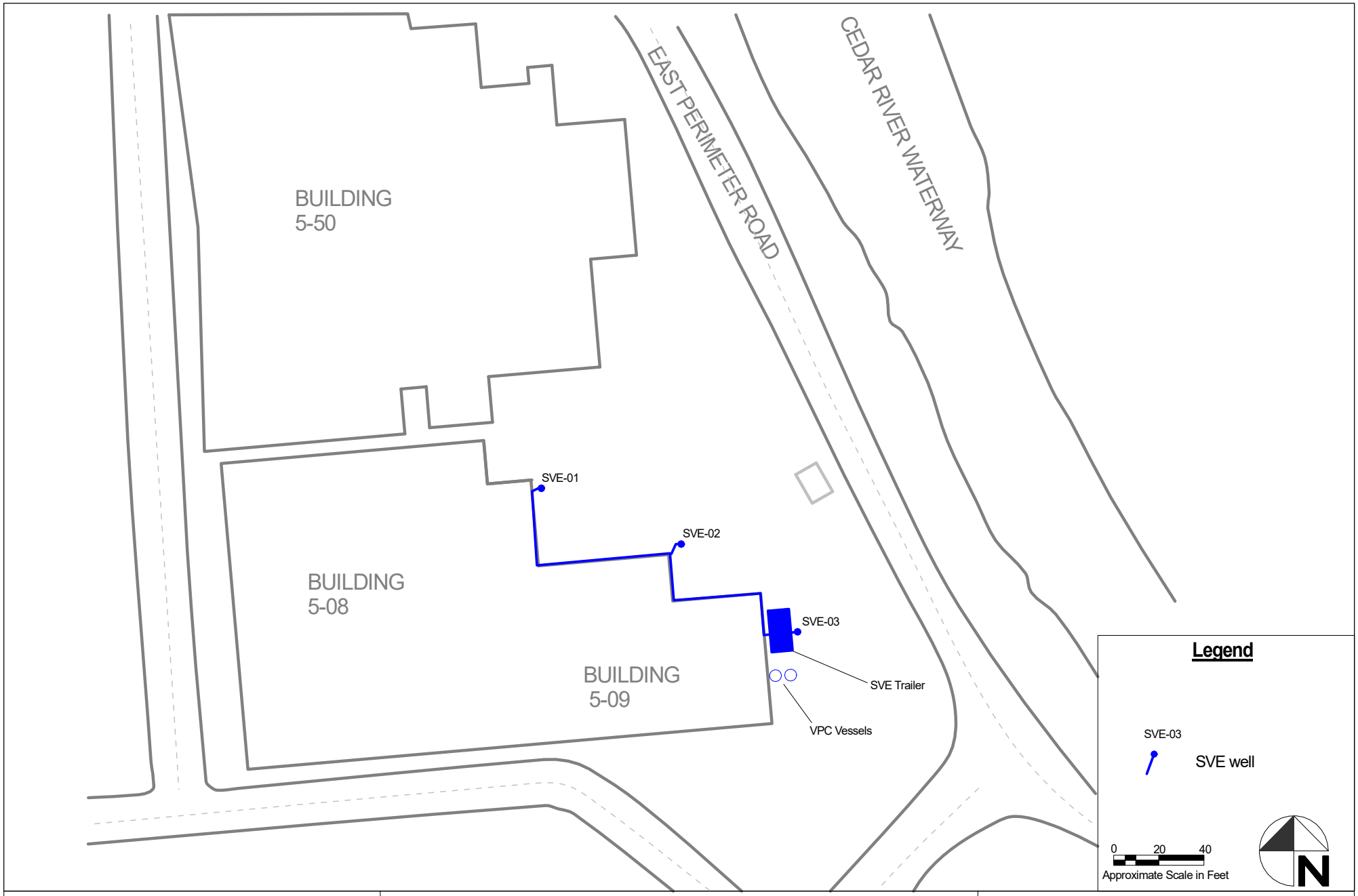
Figure 1-1 Site Location/ AOC Outlines



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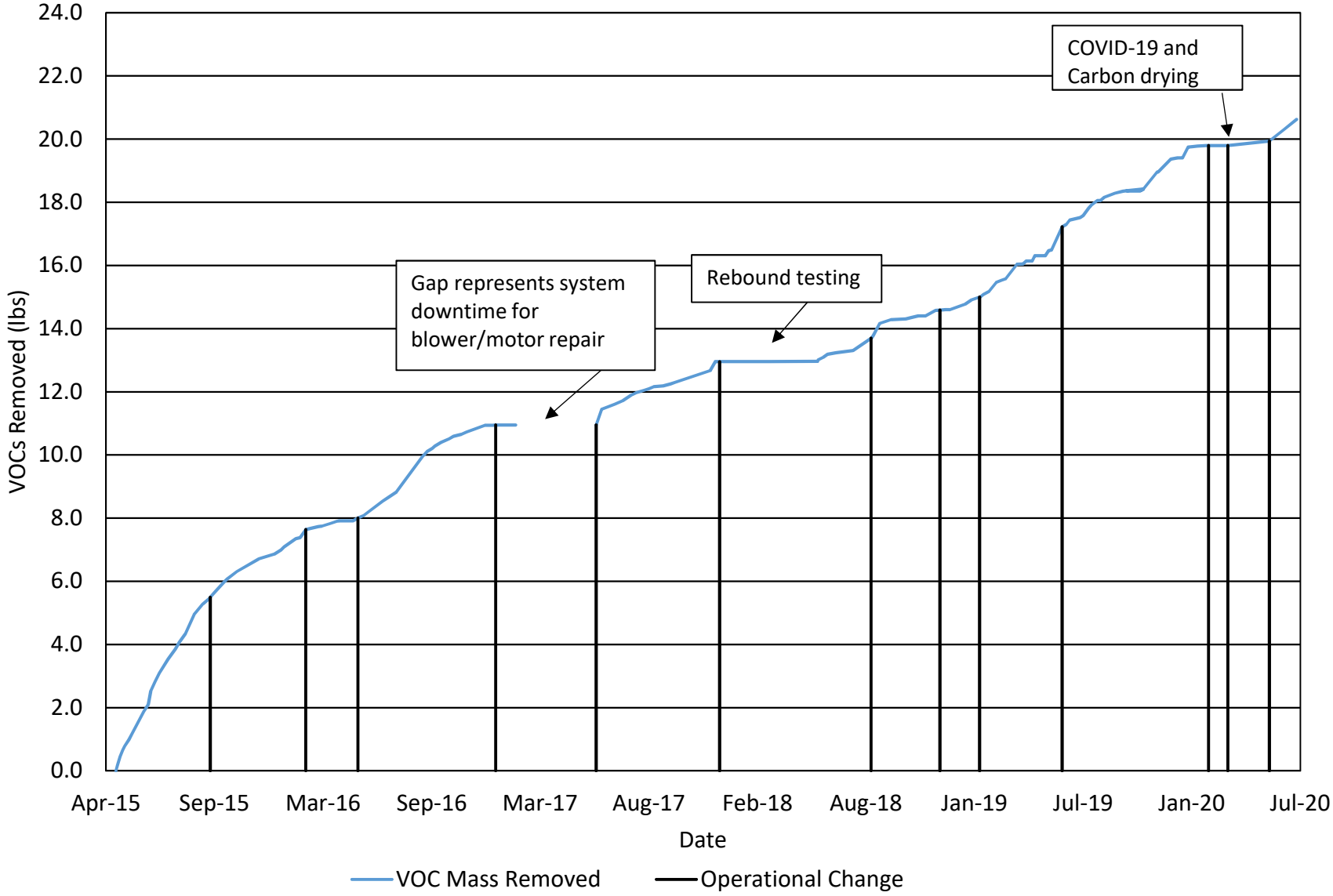
Boeing Renton
Spring 2017 SVE Quarterly Summary Report

Figure 2-1 SWMU-172/174 Area
SVE System Layout

Figure 2-2 Cumulative VOC Mass Removed - SWMU-172/174 SVE System



*SWMU 172/174 SVE system did not run Winter 2017 due to equipment failure.

Attachment A: Field Log Forms

Renton Cleanup Action SVE System – SWMU 172/174
Field Operations Log Form

Inspection Date: 5/19/20 Date of last inspection: 3/13

Periodic systems check:
1) Check flowrate, vacuum, pressure, moisture separator, water storage drums
2) Check each SVE well, VPC inlet, and VPC outlet with PID.

Operational Parameters - Monitoring interval is variable.

Inspection Time: 0800 Motor Hours: 813.7

Blower	Current Value	
	Initial	After Adj.
Vacuum gauge	28"H20	44"H20
Pressure gauge	90"H20	10"H20
System flow rate	42 scfm	105scfm
Blower Temperature	62°F	62°F
Temp.at lag VPC discharge	NT	

Other Notes

Reconfig carbon hoses to operate system (was set up to by carbon vessel 1). Power on. Open SVE 2+3, SVE 1 vent. Open air intake & close bleed. Adjust recycle valve.

PID
0850 PPB
IN - 6,003/6,456
SVE 2 - 328/360
SVE 3 - 7,944/9021

0930 Collect TO-15 @ 60min
IN- 6,020/6,188 → SVE-IN-60-051920 @ 0935
SVE2- 836/741 SVE-2-60-051920 @ 0940
SVE3- 9,229/10.41 ppm SVE-3-60-051920 @ 0945

No significant changes in PID @ 3 hrs (1120) will come back in 48hrs & recheck/sample

Other notes: check oil level, drive belts, TEFC motor fan, any unusual noise/vibration

PID Model: PPB RAE Details: 0.0 ppb / 10.00 ppm

Calibration time/ date: 5/19/20 0800 PID check after monitoring:

Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated[1]
SVE-01	Vent						
SVE-02	1120	1,036 ppb	939 ppb				
SVE-03		10.22 ppm	10.30 ppm				
VPC Inlet		6,410 ppb	6,336 ppb				
VPC Midpoint							
VPC Outlet							
Other vapor point _____							

1. Flow rate calculated from the equation $Flow\ Rate\ (cfm) = 12.24 \times \sqrt{differential\ pressure}$.

Questions? Call Justin Neste @ (360) 981-5606
At the Completion of a monitoring event scan monitoring forms and email to Justin Neste: Justin.Neste@calibresys.com

Signature Justin Neste (Printed Name) (Signature) 5/19/20 (Date)

Renton Cleanup Action SVE System – SWMU 172/174
Field Operations Log Form

Inspection Date: 5/21/20 Date of last inspection: 5/19/20

Periodic systems check:
1) Check flowrate, vacuum, pressure, moisture separator, water storage drums
2) Check each SVE well, VPC inlet, and VPC outlet with PID.

Operational Parameters - Monitoring interval is variable.		
Inspection Time: 0830		Motor Hours: 861.9
Blower	**Current Value**	**Other Notes**
Vacuum gauge	46" H_2O	Onsite to recheck / Sample system
Pressure gauge	10" H_2O	TO-15 Samples
System flow rate	105 SCFM	SVE-IN-B-052120 @ 0910
Blower Temperature	113°F	SVE-2-B-052120 @ 0915
Temp.at lag VPC discharge	NT	SVE-3-B-052120 @ 0920
Other notes: check oil level, drive belts, TEFC motor fan, any unusual noise/vibration		

PID Model: PPB RAE 3000	Details: 0 PPB / 10.00 ppm
Calibration time/ date: 5/21/20 0830	PID check after monitoring:

Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated[1]
SVE-01	Vent						
SVE-02	0850	504 ppb	483 ppb				
SVE-03		4,087 ppb	4,324 ppb				
VPC Inlet		3,136 ppb	3,159 ppb				
VPC Midpoint							
VPC Outlet							
Other vapor point _____							

1. Flow rate calculated from the equation $Flow\ Rate\ (cfm) = 12.24 \times \sqrt{differential\ pressure}$.

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Signature: Justin Neste (Printed Name) _____ (Signature) 5/21/20 (Date)

Renton Cleanup Action SVE System – SWMU 172/174
Field Operations Log Form

Inspection Date: 6/11/20 Date of last inspection: 5/21/20

Periodic systems check:
1) Check flowrate, vacuum, pressure, moisture separator, water storage drums
2) Check each SVE well, VPC inlet, and VPC outlet with PID.

Operational Parameters - Monitoring interval is variable.		
Inspection Time: 0725		Motor Hours: 1364.7
Blower	**Current Value**	**Other Notes**
Vacuum gauge	55 "H20	
Pressure gauge	5 " H20	
System flow rate	100 SCFM	
Blower Temperature	113°F	
Temp.at lag VPC discharge		
Other notes: check oil level, drive belts, TEFC motor fan, any unusual noise/vibration		

PID Model: PPB RAE 3000	Details: — / 10.00 ppm
Calibration time/ date: 6/11/20 0725	PID check after monitoring:

Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated[1]
SVE-01	VENT						
SVE-02		2,512 ppb	2,403 ppb				
SVE-03		9,319 ppb	9,951 ppb				
VPC Inlet		7521 ppb	6,419 ppb				
VPC Midpoint							
VPC Outlet							
Other vapor point _____							

1. Flow rate calculated from the equation $Flow\ Rate\ (cfm) = 12.24 \times \sqrt{differential\ pressure}$.

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Signature _____ Printed Name _____ Signature _____ Date

Renton Cleanup Action SVE System – SWMU 172/174
Field Operations Log Form

Inspection Date: 7/2/20 Date of last inspection: 6/11/20

Periodic systems check:
1) Check flowrate, vacuum, pressure, moisture separator, water storage drums
2) Check each SVE well, VPC inlet, and VPC outlet with PID.

Operational Parameters - Monitoring interval is variable.		
Inspection Time: 0830		Motor Hours: 1,867.5
Blower	**Current Value**	**Other Notes**
Vacuum gauge	65" H20	Changed Blower Oil.
Pressure gauge	10" H20	
System flow rate	100 SCFM	
Blower Temperature	123° F	
Temp.at lag VPC discharge		
Other notes: check oil level, drive belts, TEFC motor fan, any unusual noise/vibration		

PID Model: PPB RAE 300			Details: 0.0 / 9,999 ppb				
Calibration time/ date: 7/2/20 0830			PID check after monitoring:				
Sampling Point	**Time**	**PID Reading (1)**	**PID Reading (2)**	**Vacuum**	**Flow Rate (gauge)**	**Differential Pressure**	**Flow Rate Calculated[1]**
SVE-01	Vent						
SVE-02		742 ppb	689 ppb				
SVE-03		2,320 ppb	2,414 ppb				
VPC Inlet		1,690 ppb	1,720 ppb				
VPC Midpoint							
VPC Outlet		0 ppb	0 ppb				
Other vapor point _____							

1. Flow rate calculated from the equation $Flow\ Rate\ (cfm) = 12.24 \times \sqrt{differential\ pressure}$.

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Signature Justin Neste (Printed Name) _____ (Signature) 7/2/20 (Date)

Attachment B: TO-15 Laboratory Data Package

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6/8/2020
Mr. Justin Neste
CALIBRE, Environmental Technology Solutions
20926 Pugh Rd NE

Poulsbo WA 98370

Project Name: Renton 5-09
Project #:
Workorder #: 2005571

Dear Mr. Justin Neste

The following report includes the data for the above referenced project for sample(s) received on 5/26/2020 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Alexandra Winslow

Project Manager

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WORK ORDER #: 2005571

Work Order Summary

CLIENT:	Mr. Justin Neste CALIBRE, Environmental Technology Solutions 20926 Pugh Rd NE Poulsbo, WA 98370	**BILL TO:**	Accounts Payable Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	360-981-5606	**P.O. #**	
FAX:		**PROJECT #**	Renton 5-09
DATE RECEIVED:	05/26/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	06/08/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SVE-IN-60-051920	TO-15	3.5 "Hg	15 psi
02A	SVE-2-60-051920	TO-15	2.5 "Hg	15 psi
03A	SVE-3-60-051920	TO-15	3.0 "Hg	15 psi
04A	SVE-IN-B-052120	TO-15	4.0 "Hg	15 psi
05A	SVE-2-B-052120	TO-15	2.0 "Hg	15 psi
06A	SVE-3-B-052120	TO-15	2.5 "Hg	15 psi
07A	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/08/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
CALIBRE, Environmental Technology Solutions
Workorder# 2005571

Six 1 Liter Summa Canister samples were received on May 26, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Dilution was performed on sample SVE-3-60-051920 due to the presence of high level target species.

The hydrocarbon profile present in sample SVE-IN-B-052120 did not resemble that of commercial gasoline. Results were calculated using the response factor derived from the gasoline calibration.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVE-IN-60-051920

Lab ID#: 2005571-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	1.1	5.7	4.5	23
1,1,1-Trichloroethane	1.1	4.0	6.2	22
Trichloroethene	1.1	17	6.2	91
Tetrachloroethene	1.1	150	7.8	1000

Client Sample ID: SVE-2-60-051920

Lab ID#: 2005571-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	1.1	1.4	4.4	5.6
1,1,1-Trichloroethane	1.1	1.6	6.0	8.6
Trichloroethene	1.1	3.8	5.9	20
Tetrachloroethene	1.1	28	7.5	190

Client Sample ID: SVE-3-60-051920

Lab ID#: 2005571-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	1.7	2.0	7.0	7.9
cis-1,2-Dichloroethene	1.7	14	6.8	54
1,1,1-Trichloroethane	1.7	10	9.4	57
Trichloroethene	1.7	49	9.3	260
Tetrachloroethene	1.7	350	12	2400

Client Sample ID: SVE-IN-B-052120

Lab ID#: 2005571-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	1.2	5.0	4.6	20
1,1,1-Trichloroethane	1.2	2.5	6.4	14
Trichloroethene	1.2	230	6.3	1200
Tetrachloroethene	1.2	120	7.9	840

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVE-IN-B-052120

Lab ID#: 2005571-04A

TPH ref. to Gasoline (MW=100)	120	210	480	860

Client Sample ID: SVE-2-B-052120

Lab ID#: 2005571-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	1.1	2.4	4.3	9.6
Trichloroethene	1.1	3.4	5.8	18
Tetrachloroethene	1.1	20	7.3	140

Client Sample ID: SVE-3-B-052120

Lab ID#: 2005571-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	1.1	9.8	4.4	39
1,1,1-Trichloroethane	1.1	5.9	6.0	32
Trichloroethene	1.1	240	5.9	1300
Tetrachloroethene	1.1	290	7.5	2000

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Client Sample ID: SVE-IN-60-051920

Lab ID#: 2005571-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052936**	**Date of Collection:**	**5/19/20 9:36:00 AM**
Dil. Factor:	**2.29**	**Date of Analysis:**	**5/30/20 08:57 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	11	Not Detected	24	Not Detected
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
Freon 113	1.1	Not Detected	8.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Acetone	11	Not Detected	27	Not Detected
Carbon Disulfide	4.6	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	40	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Hexane	1.1	Not Detected	4.0	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.6	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.1	5.7	4.5	23
Chloroform	1.1	Not Detected	5.6	Not Detected
1,1,1-Trichloroethane	1.1	4.0	6.2	22
Benzene	1.1	Not Detected	3.6	Not Detected
Trichloroethene	1.1	17	6.2	91
Toluene	1.1	Not Detected	4.3	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.2	Not Detected
Tetrachloroethene	1.1	150	7.8	1000
Chlorobenzene	1.1	Not Detected	5.3	Not Detected
Ethyl Benzene	1.1	Not Detected	5.0	Not Detected
m,p-Xylene	1.1	Not Detected	5.0	Not Detected
o-Xylene	1.1	Not Detected	5.0	Not Detected
Styrene	1.1	Not Detected	4.9	Not Detected
Cumene	1.1	Not Detected	5.6	Not Detected
Propylbenzene	1.1	Not Detected	5.6	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
TPH ref. to Gasoline (MW=100)	110	Not Detected	470	Not Detected
Acetonitrile	11	Not Detected	19	Not Detected
Vinyl Acetate	4.6	Not Detected	16	Not Detected
Octane	4.6	Not Detected	21	Not Detected
Pentane	4.6	Not Detected	14	Not Detected
Butylbenzene	4.6	Not Detected	25	Not Detected
Decane	4.6	Not Detected	27	Not Detected
Dodecane	11	Not Detected	80	Not Detected
sec-Butylbenzene	4.6	Not Detected	25	Not Detected
p-Cymene	4.6	Not Detected	25	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits

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Client Sample ID: SVE-IN-60-051920

Lab ID#: 2005571-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052936**	**Date of Collection:**	**5/19/20 9:36:00 AM**
Dil. Factor:	**2.29**	**Date of Analysis:**	**5/30/20 08:57 AM**

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: SVE-2-60-051920

Lab ID#: 2005571-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052931**	**Date of Collection:**	**5/19/20 9:41:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**5/30/20 04:12 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
Freon 113	1.1	Not Detected	8.4	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	Not Detected	26	Not Detected
Carbon Disulfide	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Hexane	1.1	Not Detected	3.9	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	1.4	4.4	5.6
Chloroform	1.1	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.1	1.6	6.0	8.6
Benzene	1.1	Not Detected	3.5	Not Detected
Trichloroethene	1.1	3.8	5.9	20
Toluene	1.1	Not Detected	4.1	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	28	7.5	190
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
TPH ref. to Gasoline (MW=100)	110	Not Detected	450	Not Detected
Acetonitrile	11	Not Detected	18	Not Detected
Vinyl Acetate	4.4	Not Detected	15	Not Detected
Octane	4.4	Not Detected	20	Not Detected
Pentane	4.4	Not Detected	13	Not Detected
Butylbenzene	4.4	Not Detected	24	Not Detected
Decane	4.4	Not Detected	26	Not Detected
Dodecane	11	Not Detected	77	Not Detected
sec-Butylbenzene	4.4	Not Detected	24	Not Detected
p-Cymene	4.4	Not Detected	24	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits

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Client Sample ID: SVE-2-60-051920

Lab ID#: 2005571-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052931**	**Date of Collection:**	**5/19/20 9:41:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**5/30/20 04:12 AM**

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: SVE-3-60-051920

Lab ID#: 2005571-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052933**	**Date of Collection:**	**5/19/20 9:46:00 AM**
Dil. Factor:	**3.45**	**Date of Analysis:**	**5/30/20 05:11 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	17	Not Detected	36	Not Detected
Vinyl Chloride	1.7	Not Detected	4.4	Not Detected
Freon 113	1.7	Not Detected	13	Not Detected
1,1-Dichloroethene	1.7	Not Detected	6.8	Not Detected
Acetone	17	Not Detected	41	Not Detected
Carbon Disulfide	6.9	Not Detected	21	Not Detected
Methylene Chloride	17	Not Detected	60	Not Detected
trans-1,2-Dichloroethene	1.7	Not Detected	6.8	Not Detected
Hexane	1.7	Not Detected	6.1	Not Detected
1,1-Dichloroethane	1.7	2.0	7.0	7.9
2-Butanone (Methyl Ethyl Ketone)	6.9	Not Detected	20	Not Detected
cis-1,2-Dichloroethene	1.7	14	6.8	54
Chloroform	1.7	Not Detected	8.4	Not Detected
1,1,1-Trichloroethane	1.7	10	9.4	57
Benzene	1.7	Not Detected	5.5	Not Detected
Trichloroethene	1.7	49	9.3	260
Toluene	1.7	Not Detected	6.5	Not Detected
1,1,2-Trichloroethane	1.7	Not Detected	9.4	Not Detected
Tetrachloroethene	1.7	350	12	2400
Chlorobenzene	1.7	Not Detected	7.9	Not Detected
Ethyl Benzene	1.7	Not Detected	7.5	Not Detected
m,p-Xylene	1.7	Not Detected	7.5	Not Detected
o-Xylene	1.7	Not Detected	7.5	Not Detected
Styrene	1.7	Not Detected	7.3	Not Detected
Cumene	1.7	Not Detected	8.5	Not Detected
Propylbenzene	1.7	Not Detected	8.5	Not Detected
1,3,5-Trimethylbenzene	1.7	Not Detected	8.5	Not Detected
1,2,4-Trimethylbenzene	1.7	Not Detected	8.5	Not Detected
TPH ref. to Gasoline (MW=100)	170	Not Detected	700	Not Detected
Acetonitrile	17	Not Detected	29	Not Detected
Vinyl Acetate	6.9	Not Detected	24	Not Detected
Octane	6.9	Not Detected	32	Not Detected
Pentane	6.9	Not Detected	20	Not Detected
Butylbenzene	6.9	Not Detected	38	Not Detected
Decane	6.9	Not Detected	40	Not Detected
Dodecane	17	Not Detected	120	Not Detected
sec-Butylbenzene	6.9	Not Detected	38	Not Detected
p-Cymene	6.9	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits

eurofins | Air Toxics

Client Sample ID: SVE-3-60-051920

Lab ID#: 2005571-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052933**	**Date of Collection:**	**5/19/20 9:46:00 AM**
Dil. Factor:	**3.45**	**Date of Analysis:**	**5/30/20 05:11 AM**

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	100	70-130

eurofins | Air Toxics

Client Sample ID: SVE-IN-B-052120

Lab ID#: 2005571-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052932**	**Date of Collection:**	**5/21/20 9:11:00 AM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**5/30/20 04:41 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
Freon 113	1.2	Not Detected	8.9	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	Not Detected	28	Not Detected
Carbon Disulfide	4.7	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	40	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	5.0	4.6	20
Chloroform	1.2	Not Detected	5.7	Not Detected
1,1,1-Trichloroethane	1.2	2.5	6.4	14
Benzene	1.2	Not Detected	3.7	Not Detected
Trichloroethene	1.2	230	6.3	1200
Toluene	1.2	Not Detected	4.4	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	120	7.9	840
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Styrene	1.2	Not Detected	5.0	Not Detected
Cumene	1.2	Not Detected	5.7	Not Detected
Propylbenzene	1.2	Not Detected	5.7	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
TPH ref. to Gasoline (MW=100)	120	210	480	860
Acetonitrile	12	Not Detected	20	Not Detected
Vinyl Acetate	4.7	Not Detected	16	Not Detected
Octane	4.7	Not Detected	22	Not Detected
Pentane	4.7	Not Detected	14	Not Detected
Butylbenzene	4.7	Not Detected	26	Not Detected
Decane	4.7	Not Detected	27	Not Detected
Dodecane	12	Not Detected	81	Not Detected
sec-Butylbenzene	4.7	Not Detected	26	Not Detected
p-Cymene	4.7	Not Detected	26	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits

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Client Sample ID: SVE-IN-B-052120

Lab ID#: 2005571-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052932**	**Date of Collection:**	**5/21/20 9:11:00 AM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**5/30/20 04:41 AM**

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: SVE-2-B-052120

Lab ID#: 2005571-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052914**	**Date of Collection:**	**5/21/20 9:16:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**5/29/20 06:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
Freon 113	1.1	Not Detected	8.3	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Acetone	11	Not Detected	26	Not Detected
Carbon Disulfide	4.3	Not Detected	13	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.3	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	2.4	4.3	9.6
Chloroform	1.1	Not Detected	5.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Benzene	1.1	Not Detected	3.4	Not Detected
Trichloroethene	1.1	3.4	5.8	18
Toluene	1.1	Not Detected	4.1	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Tetrachloroethene	1.1	20	7.3	140
Chlorobenzene	1.1	Not Detected	5.0	Not Detected
Ethyl Benzene	1.1	Not Detected	4.7	Not Detected
m,p-Xylene	1.1	Not Detected	4.7	Not Detected
o-Xylene	1.1	Not Detected	4.7	Not Detected
Styrene	1.1	Not Detected	4.6	Not Detected
Cumene	1.1	Not Detected	5.3	Not Detected
Propylbenzene	1.1	Not Detected	5.3	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
TPH ref. to Gasoline (MW=100)	110	Not Detected	440	Not Detected
Acetonitrile	11	Not Detected	18	Not Detected
Vinyl Acetate	4.3	Not Detected	15	Not Detected
Octane	4.3	Not Detected	20	Not Detected
Pentane	4.3	Not Detected	13	Not Detected
Butylbenzene	4.3	Not Detected	24	Not Detected
Decane	4.3	Not Detected	25	Not Detected
Dodecane	11	Not Detected	75	Not Detected
sec-Butylbenzene	4.3	Not Detected	24	Not Detected
p-Cymene	4.3	Not Detected	24	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits

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Client Sample ID: SVE-2-B-052120

Lab ID#: 2005571-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052914**	**Date of Collection:**	**5/21/20 9:16:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**5/29/20 06:20 PM**

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: SVE-3-B-052120

Lab ID#: 2005571-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052915**	**Date of Collection:**	**5/21/20 9:21:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**5/29/20 06:49 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
Freon 113	1.1	Not Detected	8.4	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	Not Detected	26	Not Detected
Carbon Disulfide	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Hexane	1.1	Not Detected	3.9	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	9.8	4.4	39
Chloroform	1.1	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.1	5.9	6.0	32
Benzene	1.1	Not Detected	3.5	Not Detected
Trichloroethene	1.1	240	5.9	1300
Toluene	1.1	Not Detected	4.1	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	290	7.5	2000
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
TPH ref. to Gasoline (MW=100)	110	Not Detected	450	Not Detected
Acetonitrile	11	Not Detected	18	Not Detected
Vinyl Acetate	4.4	Not Detected	15	Not Detected
Octane	4.4	Not Detected	20	Not Detected
Pentane	4.4	Not Detected	13	Not Detected
Butylbenzene	4.4	Not Detected	24	Not Detected
Decane	4.4	Not Detected	26	Not Detected
Dodecane	11	Not Detected	77	Not Detected
sec-Butylbenzene	4.4	Not Detected	24	Not Detected
p-Cymene	4.4	Not Detected	24	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits

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Client Sample ID: SVE-3-B-052120

Lab ID#: 2005571-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052915**	**Date of Collection:**	**5/21/20 9:21:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**5/29/20 06:49 PM**

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2005571-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052906d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 11:40 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
TPH ref. to Gasoline (MW=100)	50	Not Detected	200	Not Detected
Acetonitrile	5.0	Not Detected	8.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Octane	2.0	Not Detected	9.3	Not Detected
Pentane	2.0	Not Detected	5.9	Not Detected
Butylbenzene	2.0	Not Detected	11	Not Detected
Decane	2.0	Not Detected	12	Not Detected
Dodecane	5.0	Not Detected	35	Not Detected
sec-Butylbenzene	2.0	Not Detected	11	Not Detected
p-Cymene	2.0	Not Detected	11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits

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Client Sample ID: Lab Blank

Lab ID#: 2005571-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052906d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 11:40 AM**	

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 2005571-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 09:46 AM**	

Compound	%Recovery
Chloromethane	86
Vinyl Chloride	85
Freon 113	83
1,1-Dichloroethene	83
Acetone	80
Carbon Disulfide	80
Methylene Chloride	82
trans-1,2-Dichloroethene	89
Hexane	85
1,1-Dichloroethane	90
2-Butanone (Methyl Ethyl Ketone)	87
cis-1,2-Dichloroethene	90
Chloroform	95
1,1,1-Trichloroethane	87
Benzene	91
Trichloroethene	96
Toluene	93
1,1,2-Trichloroethane	94
Tetrachloroethene	95
Chlorobenzene	92
Ethyl Benzene	89
m,p-Xylene	94
o-Xylene	91
Styrene	96
Cumene	92
Propylbenzene	91
1,3,5-Trimethylbenzene	94
1,2,4-Trimethylbenzene	95
TPH ref. to Gasoline (MW=100)	100
Acetonitrile	78
Vinyl Acetate	90
Octane	86
Pentane	79
Butylbenzene	93
Decane	83
Dodecane	101
sec-Butylbenzene	95
p-Cymene	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits

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Client Sample ID: CCV

Lab ID#: 2005571-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 09:46 AM**	

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 2005571-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 10:14 AM**	

Compound	%Recovery	Method Limits
Chloromethane	93	70-130
Vinyl Chloride	82	70-130
Freon 113	81	70-130
1,1-Dichloroethene	80	70-130
Acetone	74	70-130
Carbon Disulfide	72	70-130
Methylene Chloride	76	70-130
trans-1,2-Dichloroethene	75	70-130
Hexane	80	70-130
1,1-Dichloroethane	86	70-130
2-Butanone (Methyl Ethyl Ketone)	80	70-130
cis-1,2-Dichloroethene	92	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	84	70-130
Benzene	83	70-130
Trichloroethene	88	70-130
Toluene	90	70-130
1,1,2-Trichloroethane	85	70-130
Tetrachloroethene	89	70-130
Chlorobenzene	85	70-130
Ethyl Benzene	85	70-130
m,p-Xylene	88	70-130
o-Xylene	89	70-130
Styrene	88	70-130
Cumene	87	70-130
Propylbenzene	84	70-130
1,3,5-Trimethylbenzene	88	70-130
1,2,4-Trimethylbenzene	88	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	
Acetonitrile	Not Spiked	
Vinyl Acetate	89	60-140
Octane	Not Spiked	
Pentane	Not Spiked	
Butylbenzene	Not Spiked	
Decane	Not Spiked	
Dodecane	Not Spiked	
sec-Butylbenzene	Not Spiked	
p-Cymene	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits

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Client Sample ID: LCS

Lab ID#: 2005571-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 10:14 AM**	

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCSD

Lab ID#: 2005571-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 10:42 AM**	

Compound	%Recovery	Method Limits
Chloromethane	93	70-130
Vinyl Chloride	79	70-130
Freon 113	82	70-130
1,1-Dichloroethene	78	70-130
Acetone	76	70-130
Carbon Disulfide	73	70-130
Methylene Chloride	77	70-130
trans-1,2-Dichloroethene	73	70-130
Hexane	80	70-130
1,1-Dichloroethane	85	70-130
2-Butanone (Methyl Ethyl Ketone)	79	70-130
cis-1,2-Dichloroethene	92	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	84	70-130
Benzene	84	70-130
Trichloroethene	88	70-130
Toluene	91	70-130
1,1,2-Trichloroethane	88	70-130
Tetrachloroethene	92	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	87	70-130
m,p-Xylene	90	70-130
o-Xylene	90	70-130
Styrene	90	70-130
Cumene	89	70-130
Propylbenzene	86	70-130
1,3,5-Trimethylbenzene	90	70-130
1,2,4-Trimethylbenzene	90	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	
Acetonitrile	Not Spiked	
Vinyl Acetate	94	60-140
Octane	Not Spiked	
Pentane	Not Spiked	
Butylbenzene	Not Spiked	
Decane	Not Spiked	
Dodecane	Not Spiked	
sec-Butylbenzene	Not Spiked	
p-Cymene	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits

Client Sample ID: LCSD

Lab ID#: 2005571-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p052904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/29/20 10:42 AM**	

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	104	70-130