GROUNDWATER MONITORING REPORT – DRY SEASON 2024, REVISION 1

RCRA CORRECTIVE ACTION PROGRAM
BOEING RENTON FACILITY

Prepared for:

THE BOEING COMPANY

Seattle, Washington

NOVEMBER 14, 2024

GROUNDWATER MONITORING REPORT – DRY SEASON 2024, REVISION 1

RCRA CORRECTIVE ACTION PROGRAM
BOEING RENTON FACILITY

PROJECT # PS24206850

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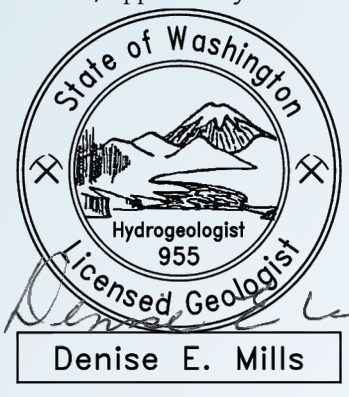

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LIST OF ABBREVIATIONS AND ACRONYMS

µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
1,1-DCE	1,1-dichloroethene
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc
Amec	Amec Environment & Infrastructure, Inc
AOC	area of concern
Boeing	The Boeing Company
Calibre	CALIBRE Systems, Inc.
CAP	Cleanup Action Plan
cis-1,2-DCE	cis-1,2-dichloroethene
CMP	Compliance Monitoring Plan
COC	constituent of concern
CPOC	conditional point of compliance
CUL	cleanup level
DO	dissolved oxygen
Ecology	Washington State Department of Ecology
EDR	Engineering Design Report
ERD	enhanced reductive dechlorination
Facility	Boeing Renton facility
MA	monitored attenuation
mg/L	milligrams per liter
MNA	monitored natural attenuation
mV	millivolts
Order	Agreed Order No. 8191
ORP	oxidation/reduction potential
PCE	tetrachloroethene
RCRA	Resource Conservation and Recovery Act
SU	Standard units
SVE	soil vapor extraction
SWMU	solid waste management unit
TCE	trichloroethene
TOC	total organic carbon
TPH	total petroleum hydrocarbons
VC	vinyl chloride
VOCs	volatile organic compounds
Wood	Wood Environment & Infrastructure Solutions, Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

This report provides progress reporting in conformance with Section VII.B.1 of Agreed Order Number 8191 (Order) and summarizes cleanup actions and monitoring conducted during the dry season of 2024 at The Boeing Company (Boeing) Renton facility (Facility) (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).

As approved by the Washington State Department of Ecology (Ecology) in a letter dated July 31, 2020, progress reporting is conducted on a semiannual basis in conjunction with monitoring, operations, and maintenance activities conducted pursuant to the Order and as outlined in the EDR.

The following documents summarize ongoing compliance activities conducted at the Facility:

- The original monitoring plan presented in Appendix D of the EDR (Amec, 2014) was superseded by the Compliance Monitoring Plan (CMP) (Amec Foster Wheeler, 2016a), which was subsequently revised in the first addendum to the CMP (CMP Addendum #1) (Amec Foster Wheeler, 2017).
- The groundwater monitoring program was further revised in the second addendum to the CMP (CMP Addendum #2) (Wood, 2019a), which removed selected areas or wells from the sampling program. Ecology approved these changes (Maeng, 2019).
- Boeing submitted the third addendum to the CMP (CMP Addendum #3) (CALIBRE, 2020) to Ecology on June 30, 2020. This addendum recommended further modifications to the groundwater monitoring program at the Facility. Ecology approved CMP Addendum #3 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 and monitored attenuation [MA]; the soil vapor extraction [SVE] system was shut down October 2022, decommissioning pending approval from Ecology)
- Building 4-78/79 SWMU/AOC Group: (bioremediation and MA; SVE has been discontinued per Ecology's approval of the system decommissioning during the first quarter of 2019)
- Former Fuel Farm AOC Group: (MNA)
- AOC-001 and AOC-002: (bioremediation and MA)
- AOC-003: (MA)
- AOC-004: (MA)
- AOC-060: (bioremediation and MA)
- AOC-090: (bioremediation and MA)
- 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) or EDR (Amec, 2014).

Although Apron A was not included in the CAP or EDR, this report includes monitoring results for Apron A. Semiannual monitoring of Apron A started in the fourth quarter of 2016 (Amec Foster Wheeler, 2016b).

As described in the CAP, the goals for cleanup of groundwater at the Facility 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 and

comparison with specific criteria are discussed in this report for each SWMU and AOC. Concentrations for protection of groundwater for beneficial use for each constituent of concern (COC) are based on site-specific cleanup levels (CULs) specified in the CAP. In June 2023, Ecology approved the implementation of an updated CUL of 8.0 micrograms per liter (µg/L) for arsenic (Cramer, 2023), which is the Puget Sound Basin background concentration according to Ecology's *Natural Background Groundwater Arsenic Concentrations in Washington State* guidance (Ecology, 2022). Previously, the CUL for arsenic was 1.0 µg/L. This CUL currently applies to SWMU-172/174. Otherwise, the measured COC concentrations in groundwater presented in this report are compared to the CULs specified in the CAP.

This semiannual report:

- Describes work completed during the reporting period.
- 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 semiannual sampling event, 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 reporting period.
- Describes and discusses trends in monitoring data.
- Assesses remediation at each area.
- Assesses attainment of CULs at the CPOCs.

This report presents information based on monitoring activities conducted during the dry season 2024 for the period from May 1 through October 31, 2024. In accordance with the requirements of the Order, corrective action activities were conducted at the Facility as described in this report.

1.1 WORK COMPLETED IN THE DRY SEASON OF 2024

The following work was completed during the dry season of 2024 (the period from May 1 through October 31, 2024):

- Boeing submitted the 2024 Groundwater Monitoring Report – Wet Season 2024 to Ecology and City of Renton on May 30, 2024.
- Boeing submitted the Investigation of Apron R Area Technical Memorandum to Ecology on June 19, 2024.
- Boeing received comments from Ecology on the Investigation of Apron R Technical Memorandum on July 18, 2024.
- Boeing submitted a response to Ecology's comments and a revised Investigation of Apron R Technical Memorandum to Ecology on September 16, 2024.
- WSP completed the 2024 sitewide dry season sampling between August 12 and August 15, 2024.
- On June 1, 2024, WSP collected a water sample from an Apron A catch basin following reports of an odor coming from the catch basin. Based on the observations and results from this event, WSP believes the water present in the catch basin is groundwater inflow and that the characteristics observed in the catch basin water are not consistent with characteristics typically associated with the COCs currently monitored in Apron A. More information regarding this sampling event and the associated results can be found in Section 3.10.

- During this reporting period, WSP assumed management of the bioremediation and soil vapor extraction taking place at the Facility. CALIBRE Systems, Inc. has transitioned out of this project and provided WSP will all information, equipment, and materials available to continue these tasks for remediation. Previous Semi-Annual Reports have included an appendix with information regarding bioremediation and/or soil vapor extraction activities during the period. This information will now be included in this semi-annual report text, when applicable.

1.2 DEVIATIONS FROM REQUIRED TASKS

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

1.3 DEVIATIONS FROM CAP

No deviations from tasks required in the CAP occurred during this reporting period.

1.4 SCHEDULE OF MONITORING

Ecology approved the modifications to the monitoring plan in CMP Addendum #3 (CALIBRE, 2020) on July 31, 2020, changing to a sitewide semiannual sampling program with sampling events to occur during the wet and dry seasons (in February and August, respectively). The current monitoring plan is detailed in Appendix A, Table A-1. Monitoring wells in AOC-001/002 were included in CMP Addendum #2, but monitoring was discontinued due to construction in the area. The wells were re-installed in July 2023 and were sampled during this reporting period.

1.5 WORK PROJECTED FOR THE NEXT REPORTING PERIOD

The following work is projected for the upcoming 2025 wet season (November 1, 2024, to April 30, 2025):

- Upon Ecology's concurrence and approval, the Investigation of Apron R Technical Memorandum will be finalized and submitted to Ecology and the offsite property owner, the Washington State Department of Natural Resources (DNR).
- Boeing plans to continue its coordination with DNR including discussing the statement of work and access agreement requirements for the proposed offsite investigation on the DNR parcel between Apron R and Lake Washington.
- The Apron R Groundwater Investigation Work Plan, including proposed direct push sample locations to delineate petroleum hydrocarbon contamination within the area, will be submitted to Ecology.
- Upon Ecology's concurrence and approval of the Apron R Groundwater Investigation Work Plan, WSP will perform the proposed actions for the continuing investigation of historical contamination in Apron R.
- Based on evaluation of the semiannual monitoring data in this report, the following areas are planned for continued enhanced reductive dechlorination (ERD) treatment of volatile organic compounds (VOCs) using substrate injections in groundwater: SWMU-172/174, Building 4-78/79 SWMU/AOC Group, AOC-090, AOC-060, and AOC-001/002.
- Reporting will be completed in accordance with the Order, CAP, EDR, and CMP Addendum #3 .

2 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 #3 (CALIBRE, 2020). Table A-1 summarizes the current groundwater monitoring program and COCs specified in the CAP and revised in CMP Addendum #1 (Amec Foster Wheeler, 2017), CMP Addendum #2 (Wood, 2019a), and CMP Addendum #3 (CALIBRE, 2020) 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 specify monitoring requirements for Apron A, which was not included in the CAP. Any changes or exceptions to the sampling or analytical methods cited in Appendix A during the event is 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 event, 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 a secure online storage application, OneDrive. The data validation memoranda are included in Appendix C.

3 CORRECTIVE ACTION ACTIVITIES COMPLETED DURING THE REPORTING PERIOD

This section describes the corrective action activities conducted at the Facility during the dry season of 2024. Compliance monitoring was conducted in accordance with the CMP (Amec Foster Wheeler, 2016a) and CMP Addendum #3 (CALIBRE, 2020).

3.1 SWMU-168

This section describes corrective action activities conducted at this SWMU. Figure 2 shows the locations of the groundwater monitoring wells at SWMU-168 for which sampling was required under CMP Addendum #3 (CALIBRE, 2020) and the groundwater elevation at the remaining well measured during this monitoring event. The cleanup remedy for SWMU-168 is MNA; therefore, cleanup activities consist of monitoring only.

3.1.1 CLEANUP ACTION ACTIVITIES

No installation/construction activities were conducted for this cleanup action area during this reporting period.

3.1.2 CMP DEVIATIONS

No deviations from the CMP occurred for this area during this reporting period. The well monitored in this SWMU and the COC remained unchanged.

3.1.3 WATER LEVELS

The groundwater elevation measured during this groundwater monitoring event at SWMU-168 is provided in Table 1 and shown on Figure 2. Groundwater elevation contours are not shown because only one well, GW230I, is currently monitored in this SWMU. The general direction of groundwater flow depicted on Figure 2 is based on historical information.

3.1.4 GROUNDWATER MONITORING RESULTS

Results for primary geochemical indicators are presented in Table 2. The result for the single SWMU-168 COC, vinyl chloride (VC), is presented in Table 3. COC results for sampling events in recent years are presented in Appendix D.

3.1.4.1 Natural Attenuation/Geochemical Indicators

The geochemical indicator results from CPOC well GW230I indicate that conditions are conducive to natural attenuation of VC in this SWMU. The pH value measured was slightly acidic at 6.28 standard units (SU). The CPOC well GW230I showed reducing conditions, with low dissolved oxygen (DO) and a negative oxidation/reduction potential (ORP) reading. Reducing conditions are present in well GW230I, indicating conditions favorable for continued dechlorination of VOCs.

3.1.4.2 COC Results for Source Area

Groundwater samples were not collected from the source area well, GW228S, for SWMU-168 per CMP Addendum #3 (CALIBRE, 2020).

3.1.4.3 COC Results for CPOC Area

Table 3 lists the analytical result for the SWMU-168 area. The concentration of VC in the groundwater from CPOC area well GW230I was below the CUL of 0.11 µg/L, at 0.0784 µg/L. Historical trends for VC in GW230I are shown in Appendix D and depicted on Figure 3. VC concentrations show an apparent historical seasonal pattern, with higher concentrations in the dry season. The last three monitoring events have departed from this trend, with decreasing VC concentrations, all detected below the CUL, since the dry season of 2022.

3.2 SWMU-172 AND SWMU-174

This section describes corrective action activities conducted at SWMU-172 and SWMU-174. The cleanup remedy for SWMU-172 and SWMU-174 is a combination of bioremediation and MA. SVE was used from 2015 through 2022. The SVE system has been shut down, as approved by Ecology, and Ecology approval for decommissioning is pending. Figure 4 shows the layout of the nine groundwater monitoring wells for which sampling is required under CMP Addendum #3 (CALIBRE, 2020) and the remediation system for these SWMUs.

3.2.1 CLEANUP ACTION ACTIVITIES

3.2.1.1 Installation/Construction Activities

No installation or construction activities were conducted in this SWMU Group during this reporting period.

3.2.1.2 SVE and Bioremediation Operations

The SVE system was in operation between April 17, 2015, and October 24, 2022. SVE was discontinued on October 24, 2022, as approved by Ecology (Cramer, 2022). Permanent discontinuation of SVE and decommissioning of the SVE system are subject to Ecology's evaluation of the results of the sub-slab vapor sampling, which took place in May 2023. The most recent injection of ERD treatment amendments was completed in April 2024. All of the SVE system equipment and infrastructure has been retained pending future discussions with Ecology regarding permanent discontinuation and removal.

3.2.2 CMP DEVIATIONS

No deviations from the CMP occurred for these SWMUs during this reporting period. The wells monitored in these SWMUs and the COCs remained unchanged.

3.2.3 WATER LEVELS

The groundwater elevations measured during this groundwater monitoring event at SWMU-172 and SWMU-174 are summarized in Table 4 and shown on Figure 4. The groundwater elevation data show a flow direction generally to the east, toward the Cedar River Waterway; however, the sheet pile wall to the east of this area prevents a direct groundwater connection to the waterway, as depicted by the groundwater contours on Figure 4.

3.2.4 GROUNDWATER MONITORING RESULTS

Groundwater at these SWMUs is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for primary geochemical indicators are presented in Table 5; results for the SWMU-172 and SWMU-174 area COCs are presented in Table 6.

3.2.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 5. Specific conductivity in source area well GW153S, all downgradient plume area wells, and all CPOC area wells ranged between 187 and 510 microsiemens per centimeter (µS/cm), which is consistent with previously observed values for the groundwater in these SWMUs. In

source area well GW153S, all downgradient plume area wells, and all CPOC area wells, pH was slightly acidic, ranging between 6.03 and 6.64 SU. ORP was negative for all wells monitored, with the exceptions of source area well GW152S. The specific conductivity reading (1,862 µS/cm) and total organic carbon (TOC) concentration (1,757 milligrams per liter [mg/L]) were higher than historically observed in GW152S, and the pH reading from this well was moderately acidic at 5.04 SU. TOC concentrations in source area well GW153S, all downgradient plume area wells, and all CPOC area wells ranged from 9.87 to 106.20 mg/L. DO concentrations ranged from 0.01 to 0.16 mg/L in all SWMU-172 and SWMU-174 monitoring wells.

3.2.4.2 COC Results for Source and Downgradient Plume Areas

Table 6 lists the analytical results for the SWMU-172 and SWMU-174 COCs. Historical trend plots for tetrachloroethene (PCE), trichloroethene (TCE), VC, and cis-1,2-dichloroethene (cis-1,2-DCE) in source area wells GW152S and GW153S are shown on Figure 5, in downgradient plume area wells GW172S and GW173S on Figure 6, and in downgradient plume area well GW226S on Figure 7. Groundwater flows generally from the vicinity of source area well GW152S to downgradient plume area well GW172S; groundwater from source area well GW153S is also expected to generally flow toward the downgradient plume area. PCE and TCE are chlorinated solvents that were used at the Facility, while cis-1,2-DCE and VC are breakdown products resulting from the biodegradation processes.

As shown in Figures 5 through 7, the concentrations of VOCs in groundwater from source area wells and downgradient plume area wells have generally remained either stable or decreasing over time.

Arsenic was detected above the CUL (8.0 µg/L) in the groundwater from source area well GW152SS (62.4 µg/L). As shown on Figure 8, the arsenic concentrations in groundwater from source and downgradient plume area wells have generally remained within historical range over the past two years, with the exception of source area well GW152S and its downgradient counterpart GW172S.

Source area groundwater CUL exceedances (Table 6) consisted of the following:

- **GW152S:** cis-1,2-DCE (1.41 µg/L); PCE (0.848 µg/L); TCE (0.303 µg/L); VC (0.152 µg/L); arsenic (62.4 µg/L); copper (131 µg/L); and lead (74.4 µg/L).
- **GW153S:** cis-1,2-DCE (0.0574 µg/L) and VC (0.153 µg/L).

Downgradient plume area groundwater site-specific CUL exceedances (Table 6) consisted of the following:

- **GW172S:** cis-1,2-DCE (0.585 µg/L); PCE (0.0417 µg/L); TCE (0.185 µg/L); and VC (0.180 µg/L).
- **GW173S:** cis-1,2-DCE (0.226 µg/L); PCE (0.0257 µg/L); TCE (0.0706 µg/L); and VC (0.214) µg/L.
- **GW226S:** PCE (0.0248 µg/L).

3.2.4.3 COC Results for CPOC Area

As shown in Table 6, cis-1,2-DCE was detected above the CUL (0.03 µg/L) in the groundwater from CPOC area wells GW232S (0.238 µg/L), GW234S (0.114 µg/L), GW235I (0.240 µg/L), and GW236S (0.0523 µg/L). VC was detected above the CUL (0.11 µg/L) in the groundwater from GW232S (0.256 µg/L). VC was also detected in GW234S and GW235I, but below the CUL. TCE and PCE were not detected in any CPOC wells. Trend charts for cis-1,2-DCE, TCE, and VC for all CPOC area wells are presented in Figure 9. Figure 9 shows that the COC concentrations in the CPOC area either have primarily decreased or stabilized over the past two years of sampling or have maintained concentrations below respective CULs.

With the exception of detected lead concentration of 1.29 µg/L that exceeds the CUL (1.0 µg/L) in GW236S), no metals were detected above their respective CULs during this reporting period. Figure 10 shows arsenic, copper, and lead concentration trends in groundwater from the CPOC area wells since the beginning of compliance monitoring. As shown in Figure 10, these COCs have remained within historical range or decreased since the last monitoring event.

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. The cleanup remedy for this SWMU/AOC Group is bioremediation, MA, and excavation of soils contaminated with total petroleum hydrocarbons (TPH); discontinuation of SVE was approved by Ecology on November 1, 2018, and the system was decommissioned during the first quarter of 2019. Figure 11 shows the location of the September 2021 TPH source area soil excavation; seven groundwater monitoring wells for which sampling is required under CMP Addendum #3 (CALIBRE, 2020); extraction wells; decommissioned wells; horizontal SVE wells; and bioremediation injection wells for this area.

3.3.1 CLEANUP ACTION ACTIVITIES

3.3.1.1 Installation/Construction Activities

No installation or construction activities were conducted in this SWMU/AOC Group during this reporting period.

3.3.1.2 SVE and Bioremediation Activities

SVE operations were discontinued in late 2018; the current remediation method is ERD of chlorinated solvents and anaerobic biodegradation of benzene by substrate injections. The most recent injection event was conducted in April 2024. Certain bioremediation injection wells were sampled until February 2020 to monitor the status of COCs. Trend charts for cis-1,2-DCE and benzene in nitrate/sulfate injection wells are presented in Figure 12, and trend charts for TCE and VC in the injection wells are presented in Figure 13.

3.3.2 CMP DEVIATIONS

No deviations from the CMP occurred for this SWMU/AOC Group during this reporting period. The wells monitored in SWMU/AOC Group and the COCs remained unchanged.

3.3.3 WATER LEVELS

The groundwater elevations measured during this groundwater monitoring event at Building 4-78/79 SWMU/AOC Group are summarized in Table 7 and shown on Figure 11. The contouring on Figure 11 indicates a groundwater flow direction to the northeast with a very low gradient of approximately 0.0005 ft/ft. Historical information shows the flow direction is generally toward the Cedar River Waterway to the northwest. The groundwater flow direction during this monitoring period is depicted on Figure 11.

3.3.4 GROUNDWATER MONITORING RESULTS

Groundwater in this area is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for primary geochemical indicators are presented in Table 8; results for Building 4-78/79 SWMU/AOC Group COCs are presented in Table 9.

3.3.4.1 Natural Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 8. In general, source area and CPOC area wells had levels of DO ranging from 0.01 to 0.14 µg/L and moderate specific conductivity. The pH measured in monitored wells was uniform and slightly acidic, ranging between 6.09 and 6.53 SU. ORP was negative in all wells monitored. TOC concentrations in source area and CPOC area wells ranged from 16.16 to 42.18 mg/L. Geochemical indicators were generally consistent in all wells monitored in this area, indicating conditions favorable for continued dechlorination of VOCs.

3.3.4.2 COC Results for Source Area

Table 9 lists the analytical results for Building 4-78/79 SWMU/AOC Group COCs. Figures 14 and 15 show historical trends for COCs in source area wells.

VC was detected above the CUL (0.2 µg/L) in GW031S-R (0.290 µg/L) and GW244S-R (0.330 µg/L), but was not detected in any other source area wells. Benzene was detected above the CUL (0.80 µg/L) in GW033S (7.27 µg/L) and its associated duplicate sample (7.32 µg/L). Cis-1,2-DCE was detected below the CUL (0.70 µg/L) in GW244S-R (0.330 µg/L) and GW033S (0.610 µg/L), but was detected above the CUL in the field duplicate sample associated with GW033S (0.790 µg/L). TCE was detected above the CUL (0.23 µg/L) in GW244S-R (0.330 µg/L) but was not detected in any other source are wells. TPH as gasoline was detected below the CUL (800 µg/L) in GW033S and its associated field duplicate. The continued downward trend of TPH levels since 2021 is likely a result of the removal of TPH-contaminated soil that took place in September 2021.

Figure 14 presents historical results for VOCs in source area wells GW031S and GW033S. GW031S-R results were added to the existing trend chart for GW031S. COCs in GW031S appear to be stabilizing over the past five monitoring events. COCs detected in GW031S during this period have remained in historical ranges after a single-event decrease observed during the 2023 wet season.

Figure 15 presents historical results for VOCs in source area wells GW034S and GW244S. GW244S-R results were added to the existing trend chart for GW244S. TCE has remained undetected in GW034S for the last several years, and concentrations of all other COCs in GW034S have decreased or remained undetected for the last two reporting periods. COCs in GW244S have remained within historical ranges, with benzene remaining undetected.

Benzene, cis-1,2-DCE, and VC have returned to the generally stable levels observed before the increase in concentrations detected during the 2023 wet season monitoring event. Concentrations of COCs in GW031S-R and GW244S appear to have decreasing trends since the start of compliance monitoring.

3.3.4.3 COC Results for CPOC Area

As shown in Table 9, VC was detected above the CUL (0.20 µg/L) in groundwater from GW237S (0.210 µg/L) and cis-1,2-DCE was detected above the CUL (0.70 µg/L) in groundwater from GW143S (0.980 µg/L). No other detections of VC or cis-1,2-DCE were observed in any CPOC are wells sampled during this monitoring event. No detections of TCE or TPH as gasoline were observed in any CPOC area wells sampled.

Trend charts for CPOC area wells are shown in Figures 16 through 18.

Figure 16 shows that benzene and cis-1,2-DCE have been sporadically detected above the CUL in CPOC area wells GW237S and GW143S, respectively. A seasonal trend appears to be present for benzene in GW237S with higher concentrations detected during the wet season.

Figure 17 shows that TCE has not been detected in the CPOC area since the dry season of 2020, with the exception of a detection at GW143S during the 2022 dry season sampling. VC was detected above the CUL (0.20 µg/L) in CPOC area well GW237S (0.210 µg/L) during the 2024 dry season event. TPH as gasoline has been detected in only GW237S since compliance monitoring began and has been generally decreasing over time (Figure 18), with higher concentrations typically detected during the wet season.

3.4 FORMER FUEL FARM AOC GROUP

This section describes corrective action activities conducted at the Former Fuel Farm AOC Group. Figure 19 shows the layout of the three groundwater monitoring wells for which sampling is required under CMP Addendum #3 (CALIBRE, 2020). The final remedy for the Former Fuel Farm is MNA.

3.4.1 CLEANUP ACTION ACTIVITIES

No installation/construction activities were conducted for this AOC Group during this reporting period.

3.4.2 CMP DEVIATIONS

No deviations from the CMP occurred for this cleanup action area during this reporting period. The wells monitored and the COCs remained the same for this AOC Group.

3.4.3 WATER LEVELS

The groundwater elevations measured during this groundwater monitoring event at the Former Fuel Farm AOC Group are summarized in Table 10 and shown on Figure 19. Groundwater elevation contours are not shown because only three wells are monitored in this group and data are too limited to produce accurate contours. Groundwater flow direction is generally toward the east is based on historical information from this AOC.

3.4.4 GROUNDWATER MONITORING RESULTS

Groundwater at Former Fuel Farm AOC Group is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for primary geochemical indicators are presented in Table 11; results for the Former Fuel Farm AOC Group COCs are presented in Table 12.

3.4.4.1 MNA Indicators

The geochemical indicator results are presented in Table 11. Specific conductivity readings in groundwater from this AOC ranged from 184 to 277 µS/cm. Slightly acidic pH was observed in CPOC area wells ranging from 6.15 to 6.34 SU, with concentrations of DO ranging from 0.01 to 0.07 mg/L. ORP measurements ranged from 10.2 to 49.7 millivolts (mV) across the AOC. The geochemical indicators indicate natural attenuation of the COCs for the Former Fuel Farm AOC Group may be occurring.

3.4.4.2 COC Results for Source Area

The single source area well for this AOC Group was removed from the monitoring plan with Ecology's acceptance of CMP Addendum #3 (CALIBRE, 2020).

3.4.4.3 COC Results for CPOC Area

Table 12 presents the analytical results for the Former Fuel Farm AOC Group COCs. Figure 20 shows trend data for CPOC area wells GW211S, GW221S, and GW224S. Samples were analyzed for TPH as diesel, as motor oil, and as Jet A. In GW224S, TPH as diesel and as Jet A were detected above their CULs of 0.5 mg/L at 0.686 mg/L (estimated) and 0.943 mg/L, respectively. TPH as diesel and as Jet A were also detected above the CULs at 0.974 mg/L and 0.637 mg/L, respectively, in GW221S. TPH as diesel at CPOC area well GW211S was detected above the CUL at 0.548 mg/L, while TPH as Jet A was detected below the CUL in groundwater from GW211S (0.408 µg/L). TPH as motor oil was not detected in any CPOC area wells; no CULs are established for this analyte. Concentrations of TPH as Jet A in GW211S have been below the CUL and/or non-detect since the wet season of 2017 (Figure 20). Figure 20 shows COC concentrations in GW221S and GW224S remain within historical ranges since 2020.

3.5 AOC-001/002

This section describes corrective action activities conducted at AOC-001/002. The monitoring and future/continued cleanup actions for this AOC will be determined in the next CMP addendum prepared for Ecology approval. Figure 21 shows the layout of the thirteen groundwater monitoring wells in this AOC.

3.5.1 CLEANUP ACTION ACTIVITIES

No installation/construction activities were conducted for this AOC during this reporting period.

3.5.2 CMP DEVIATIONS

AOC-001/002 is not in the current CMP Addendum #3 (CALIBRE, 2020) because the area was under construction with wells decommissioned during the preparation of the altered monitoring plan. Monitoring was resumed in this area following re-installation of wells in July 2023 and is based on monitoring approved in CMP Addendum #2. Recent data will be used to evaluate conditions in this area.

3.5.3 WATER LEVELS

The groundwater elevations measured during this groundwater monitoring event at AOC-001 and AOC-002 are summarized in Table 13. A groundwater flow direction toward the northwest is depicted on the figure based on current and historical groundwater elevation data.

3.5.4 GROUNDWATER MONITORING RESULTS

Groundwater at this area is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 14; results for the AOC-001 and AOC-002 COCs are presented in Table 15.

3.5.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 14. Moderate to high specific conductivity and negative ORP (with the exception of an ORP reading of 17.1 mV in GW192S-R) were observed at all monitoring locations in this AOC during this reporting period. Readings of pH varied from acidic to slightly basic, ranging from 4.03 to 8.89 SU. Measured concentrations of DO were low, ranging from 0.01 to 0.75 mg/L. TOC measurements varied greatly, ranging between 9.45 and 25,150 mg/L.

3.5.4.2 COC Results for Source Area, Cross-Gradient, and Downgradient Plume Area

Table 15 lists the analytical results for the AOC-001 and AOC-002 COCs. Samples from wells in this group were analyzed for benzene, 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, TCE, and VC. Analytes present in Table 15 are the COCs analyzed during the last sampling event that all wells in AOC-001 and AOC-002 were sampled before decommissioning for construction (Wood, 2019b).

Source area, cross-gradient, and downgradient well groundwater CUL exceedances (Table 15) consisted of the following:

- **GW193S-R:** cis-1,2-DCE (2.19 µg/L); TCE (1.51 µg/L); and VC (1.21 µg/L).
- **GW213S-R:** cis-1,2-DCE (0.134 µg/L) and TCE (0.0266 µg/L).
- **GW215S-R:** cis-1,2-DCE (0.156 µg/L).
- **GW190S-R:** cis-1,2-DCE (0.194 µg/L) and VC (0.0818 µg/L).
- **GW191D-R:** VC (0.0934 µg/L).
- **GW192S-R:** cis-1,2-DCE (1.78 µg/L); TCE (0.0538 µg/L); and VC (1.07 µg/L).
- **GW246S-R:** cis-1,2-DCE (0.176 µg/L) and VC (0.181 µg/L).

Figures 22 and 23 show the historical trends of cis-1,2-DCE, TCE, and VC concentrations in source area well GW193S and downgradient plume area wells compared to the concentrations detected during this monitoring period. All replacement well results were added to the existing trend charts for this AOC.

3.5.4.3 COC Results for CPOC Area

The concentrations of analytes evaluated in this area can be found in Table 15. These are the same COCs that were analyzed during the last sampling event when all wells in AOC-001 and AOC-002 were sampled before decommissioning for construction (Wood, 2019b).

CPOC groundwater site-specific CUL exceedances (Table 15) consisted of the following:

- **GW185S-R:** cis-1,2-DCE (0.240 µg/L) and VC (0.124 µg/L).
- **GW195S-R:** cis-1,2-DCE (0.102 µg/L) and VC (0.117 µg/L).
- **GW196D-R:** cis-1,2-DCE (0.0250 µg/L).
- **GW197S-R:** cis-1,2-DCE (18.9 µg/L); TCE (0.268 µg/L); and VC (12.6 µg/L).
- **GW245S-R:** cis-1,2-DCE (0.204 µg/L); TCE (0.252 µg/L); and VC (0.141 µg/L).

VC and cis-1,2-DCE were detected at elevated concentrations compared to historical levels (18.9 µg/L and 12.6 µg/L, respectively) in GW197S-R. Figure 24 shows the historical trends of cis-1,2-DCE, TCE, and VC concentrations in all CPOC area wells compared to the concentrations detected during this monitoring period. All replacement well results were added to the existing trend charts for this AOC. A downward trend in COC concentrations since August 2023 has been observed in all CPOC area wells.

3.6 AOC-003

This section describes corrective action activities conducted at AOC-003. The cleanup remedy for this AOC is MA. Figure 25 shows the location of four groundwater monitoring wells for which sampling is required under CMP Addendum #3 (CALIBRE, 2020) and bioremediation wells, 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 AOC during this reporting period.

3.6.2 CMP DEVIATIONS

No deviations from the CMP occurred in this AOC during this reporting period.

3.6.3 WATER LEVELS

The groundwater elevations measured during this groundwater monitoring event at AOC-003 are summarized in Table 16 and shown on Figure 25. Groundwater elevations measured during this event indicate a flow gradient generally toward the northwest, consistent with historical results.

3.6.4 GROUNDWATER MONITORING RESULTS

Groundwater at this AOC is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 17; results for the AOC-003 COCs are presented in Table 18.

3.6.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 17. High specific conductivity, low DO, and negative ORP were observed during this reporting period. pH readings were slightly acidic for all wells in this area, ranging between 6.21 and 6.29 SU. TOC concentrations ranged from 12.00 to 13.19 mg/L.

3.6.4.2 COC Results for Source Area and Downgradient Plume Area

Table 18 lists the analytical results for the AOC-003 COCs. Samples from wells in this group were analyzed for cis-1,2-DCE, TCE, PCE, and VC. VC was detected above the CUL (0.24 µg/L) in GW249S (0.29 µg/L) and below the CUL in GW188S (0.229 µg/L). Cis-1,2-DCE was detected in both source area and downgradient plume wells below the CUL (0.78 µg/L). No detected concentrations of TCE or PCE were observed in the source area and downgradient plume area wells. Figure 26 shows the historical trends for VC in source area well GW249S and downgradient plume area well GW188S.

3.6.4.3 COC Results for CPOC Area

VC was detected above the CUL (0.24 µg/L) in CPOC area wells GW247S-R (0.581 µg/L) and GW248I (0.458 µg/L) (Table 18). No detected concentrations of cis-1,2-DCE, TCE, or PCE were found in the CPOC area wells.

Figure 27 shows the historical trends for VC in CPOC area wells GW247S and GW248I. GW247S-R results were added to the existing trend chart for GW247S. Results from the new well, beginning with the dry season 2023, appear to be within historical ranges of the initial GW247S. VC concentrations in GW248I appear to be decreasing since 2022.

3.7 AOC-004

This section describes corrective action activities conducted at AOC-004. The cleanup remedy for this AOC is MA. Figure 28 shows the location of the groundwater monitoring well for which sampling is required under CMP Addendum #3 (CALIBRE, 2020), the bioremediation wells, and the groundwater elevation measured during this monitoring event.

3.7.1 CLEANUP ACTION ACTIVITIES

No installation/construction activities were conducted for this AOC during this reporting period.

3.7.2 CMP DEVIATIONS

No deviations from the CMP occurred for this AOC during this reporting period and COCs remained the same for this AOC.

3.7.3 WATER LEVELS

The groundwater elevation measured during this groundwater monitoring event at AOC-004 is shown in Table 19 and on Figure 28. Groundwater contours cannot be drawn using the single groundwater elevation measurement for this AOC, but a general groundwater flow direction toward the west shown on Figure 28 is based on historical data.

3.7.4 GROUNDWATER MONITORING RESULTS

Groundwater at AOC-004 is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 20; the result for the AOC-004 COC (lead) is presented in Table 21.

3.7.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 20. The pH reading was near neutral at 6.92 SU. Low specific conductivity, negative ORP, and low DO readings were observed during this monitoring event.

3.7.4.2 COC Results for Source Area

Table 21 lists the analytical result for the AOC-004 COC. Lead was detected in the single source area monitoring well GW250S at 0.062 µg/L (estimated), below the CUL of 1 µg/L. Figure 29 shows the historical trend chart for lead in GW250S, which has been below the CUL since the wet season of 2023.

3.8 AOC-060

This section describes corrective action activities conducted at AOC-060. The cleanup remedy for this AOC is bioremediation and MA. Figure 30 shows the location of eight groundwater monitoring wells for which sampling and/or water level measurements are required under CMP Addendum #3 (CALIBRE, 2020), the bioremediation wells, and the groundwater elevations measured during this monitoring event.

3.8.1 CLEANUP ACTION ACTIVITIES

3.8.1.1 Installation/Construction Activities

No installation/construction activities were conducted for this AOC during this reporting period.

3.8.1.2 Bioremediation Activities

The current remediation method is bioremediation injections and ERD treatment. The most recent injection in this area occurred in April 2024. Substrate injections were conducted in B060-01, B060-02, and GW147S.

3.8.2 CMP DEVIATIONS

No deviations from the CMP occurred for this AOC during this reporting period. The wells monitored and COCs remained the same for this AOC.

3.8.3 WATER LEVELS

The groundwater elevations measured during this groundwater monitoring event at AOC-060 are summarized in Table 22 and shown on Figure 30. Groundwater flow direction is generally southwest toward the Cedar River Waterway.

3.8.4 GROUNDWATER MONITORING RESULTS

Groundwater at AOC-060 is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 23; results for the AOC-060 COCs are presented in Table 24.

3.8.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 23. Conductivity ranged from 340 to 1,085 µS/cm. DO concentrations ranged from 0.01 to 0.43 mg/L. The pH ranged from acidic to slightly acidic in this AOC, between 4.90 and 6.56 SU. TOC results from all wells ranged from 14.2 to 957.4 mg/L.

3.8.4.2 COC Results for Source, Cross-Gradient, and Downgradient Plume Areas

Table 24 lists the analytical results for the AOC-060 COCs. Wells in this group were analyzed for cis-1,2-DCE, TCE, and VC. Groundwater from source area well GW009S and wells GW012S, GW014S, and GW147S exceeded their respective CULs for all three COCs, with the exception of the detected concentration of TCE below the CUL (0.02 µg/L) in GW014S (0.0144 µg/L [estimated]) and its associated field duplicate (0.0136 µg/L [estimated]).

Figure 31 shows historical trends for COCs in source area well GW009S, which have remained within historical ranges since monitoring began. Figures 31 and 32 show historical trends for COCs in downgradient plume area wells. COC results in GW014S have been generally consistent and without large fluctuation since monitoring began. GW012S and GW147S exhibit more fluctuation in COC concentrations but appear to remain within a site-specific amplitude of historical range. This fluctuation may be associated with seasonal groundwater flow variations. TCE in GW012S appears to have increasing fluctuation over the last six monitoring events, departing from the lows observed in 2018 and 2019, but concentrations remain within the historical range for TCE concentrations in this well.

3.8.4.3 COC Results for CPOC Area

As shown in Table 24, detected concentrations of cis-1,2-DCE exceeded the CUL (0.08 µg/L) in groundwater from CPOC area wells GW150S (0.105 µg/L) and GW253I (0.0934 µg/L). TCE and VC were detected in groundwater from CPOC area wells GW150S and GW253I but did not exceed their respective CULs (0.02 µg/L and 0.26 µg/L, respectively). Figure 33 shows historical trends for COCs in CPOC area wells GW150S and GW253I. Considerable fluctuation is still present for cis-1,2-DCE and VC in GW150S; some stabilization appears to have occurred over the past four monitoring events for these COCs at GW253I. TCE appears to be stabilized below the CUL in both CPOC area wells.

3.9 AOC-090

This section describes corrective action activities conducted at AOC-090. The cleanup remedy for this AOC is bioremediation and MA. Figure 34 shows the location of five groundwater monitoring wells for which sampling is required under CMP Addendum #3 (CALIBRE, 2020), the bioremediation wells, and the groundwater elevations measured during this monitoring event.

3.9.1 CLEANUP ACTION ACTIVITIES

3.9.1.1 INSTALLATION/CONSTRUCTION ACTIVITIES

No deviations from the CMP occurred for this AOC during this reporting period. The wells monitored and COCs remained the same for this AOC.

3.9.1.2 BIOREMEDIATION ACTIVITIES

The current remediation method is bioremediation injections and ERD treatment. The most recent injection in this area occurred in April 2024. Substrate injections were conducted in B090-01 and B090-02 and did not include GW189S because the most recent VC concentration was non-detect (< 0.02 µg/L). The need for continued/further treatment in this source area will be evaluated in the future as this area transitions to MA.

3.9.2 CMP DEVIATIONS

No deviations from the CMP occurred for this area during this reporting period. The wells monitored and COCs remained the same for this AOC.

3.9.3 WATER LEVELS

The groundwater elevations measured during this groundwater monitoring event at AOC-090 are summarized in Table 25 and shown on Figure 34. Groundwater flow direction is to the west and northwest toward the Cedar River Waterway; however, the sheet pile wall to the west of this area prevents a direct groundwater connection to the waterway, as depicted by the contours.

3.9.4 GROUNDWATER MONITORING RESULTS

Groundwater at AOC-090 is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 26; results for the AOC-090 COCs are presented in Table 27.

3.9.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 26. Results showed moderate to high specific conductivity and low DO values across the area. The pH was slightly acidic in this AOC, with all wells ranging between 5.34 and 6.47 SU. TOC was measured at 7.18 mg/L in source area well GW189S. The trend plot for TOC in GW189S (Figure 35) shows TOC has stayed consistent with a slight overall decrease since a substrate injection in 2017. Subsequent injections were completed in May 2023 and April 2024.

3.9.4.2 COC Results for Source and Downgradient Plume Areas

Table 27 lists the analytical results for the AOC-090 COCs in source area well GW189S. Concentrations of 1,1,2,2-tetrachloroethane (0.181 µg/L) and TCE (0.109 µg/L) were detected above their respective CULs (0.17 µg/L and 0.08 µg/L, respectively). TPH as motor oil was also detected above the CUL (500 µg/L) in source area well GW189S at 838 µg/L. VC was detected above the CUL (0.13) in downgradient plume area well GW176S at 0.287 µg/L. Historical trends for GW189S show chlorinated VOCs have been trending downward since the start of monitoring (Figure 35).

3.9.4.3 COC Results for CPOC Area

VC was detected above the CUL in CPOC area wells GW178S (0.395 µg/L), GW207S (0.313 µg/L), and GW208S (0.359 µg/L).

3.10 APRON A AREA

This section describes corrective action activities conducted at the Apron A area. The cleanup remedy proposed for the Apron A area is bioremediation and MA. The last injection in this area occurred in June 2022 and no further injections have been planned due to the downward trend in COCs in the area. Figure 36 shows the locations of the three groundwater monitoring wells in the Apron A area for which sampling and/or water level measurements are required under CMP Addendum #3 (CALIBRE, 2020).

3.10.1 CLEANUP ACTION ACTIVITIES

On June 1, 2024, WSP mobilized to Apron A in response to an odor reportedly originating from a catch basin. The bottom of the catch basin was below the groundwater depth in this area at the time of observation. Cracks in the sidewalls of the catch basin were observed and appeared to be a potential pathway for groundwater to infiltrate into the basin. One water sample was collected from groundwater infiltrating into the basin after it was flushed for observation. The sample was analyzed for VOCs by EPA Method 8260D, and gasoline range organics by NWTPH-Gx. The full analytical reports provided by the laboratory are provided separately on a secure online storage application, OneDrive. Results for Apron A COCs were non-detect; gasoline range organics were also non-detect. Based on the results of the analytical report and the observations made on site, WSP concluded that the water present in the catch basin is likely upgradient groundwater inflow, and that the characteristics observed in the catch basin water are not consistent with characteristics typically associated with the COCs currently monitored in Apron A. No construction work was conducted in the Apron A area during this reporting period.

3.10.2 CMP DEVIATIONS

No deviations from the CMP occurred for this area during this reporting period. The wells monitored in this group and COCs remained the same.

3.10.3 WATER LEVELS

The groundwater elevation measurement from this groundwater monitoring event at Apron A is in Table 28 and shown on Figure 36. Groundwater elevation contours are not shown because only three wells are monitored in this group and the limited data set and placement of the wells limit the ability to produce accurate contours. Groundwater flow in this area is expected to be east toward the Cedar River Waterway.

3.10.4 GROUNDWATER MONITORING RESULTS

Groundwater at Apron A is monitored following the analysis protocol presented in Tables A-1 and A-2 in Appendix A. Results for primary geochemical indicators presented in Table 29; results for the Apron A area COCs are presented in Table 30.

3.10.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 29. Observations included high specific conductivity, low DO, slightly acidic pH, and a negative ORP reading. TOC was detected in GW264S at a concentration of 65.86 mg/L.

3.10.4.2 COC Results

Table 30 lists the analytical results for the Apron A area COCs (cis-1,2-DCE and VC). Cis-1,2-DCE was reported as non-detect (< 0.200 µg/L). VC was detected at a concentration of 0.480 µg/L. Analytes from Apron A samples do not have established CULs because they were added to the monitoring program after the CAP was in place (CALIBRE, 2020). Additional monitoring of the soil and groundwater in Apron A was completed in 2016 and included installation of the monitoring wells in this area (Amec Foster Wheeler, 2016b). Neither cis-1,2-DCE nor VC were detected in the groundwater from well GW264S. The trend plot for COCs in GW264S is shown in Figure 37. Though cis-1,2-DCE was not detected during the wet and dry seasons of 2022, instrument sensitivity was reduced due to matrix interference, resulting in elevated reporting limits for this analyte during those reporting periods. Cis-1,2-DCE has not been detected since the wet season of 2016. VC in GW264S had seasonal fluctuations through 2021 but has now been decreasing since February 2022. Because of the downward trend in COCs this area, no substrate injections are currently planned.

3.11 APRON R INVESTIGATION

In July 2021, TPH were observed in an excavation in the Apron R area during site construction work. Samples were collected and work was stopped while Boeing informed Ecology (through a teleconference in July 2021) and discussed next steps for investigation work to be undertaken upon construction project completion. As discussed with Ecology during the July 2021 teleconference, Boeing installed a layered geotechnical membrane backfilled with granular activated carbon above and below the observed TPH to mitigate further migration of the observed TPH in the Apron R excavation trench. This work was completed in parallel with site construction during July 2021. Boeing submitted to Ecology a technical memorandum which described the construction work in the Apron R vicinity, as well as initial characterization sampling results from the Apron R excavation trench (CALIBRE, 2021). Ecology provided comments in a letter dated August 10, 2021. Apron R construction work was completed in December 2023. In February 2024, Boeing submitted an Apron R Investigation Work Plan (CALIBRE, 2024) for Ecology review and approval (Myers, 2024; approved by Ecology in March 2024). Boeing conducted direct push probe sampling in ten discrete Apron R locations on March 18 and 19, 2024; these direct push probe samples were collected in continuation of the potential TPH source investigation. A technical memorandum with results from this initial investigation was submitted to Ecology for approval in September 2024. An Apron R Groundwater Investigation Work Plan, which will propose additional direct push sample locations to delineate the extent of the historical TPH contamination, is currently in progress and will be submitted to Ecology for approval during the 2025 wet season reporting period.

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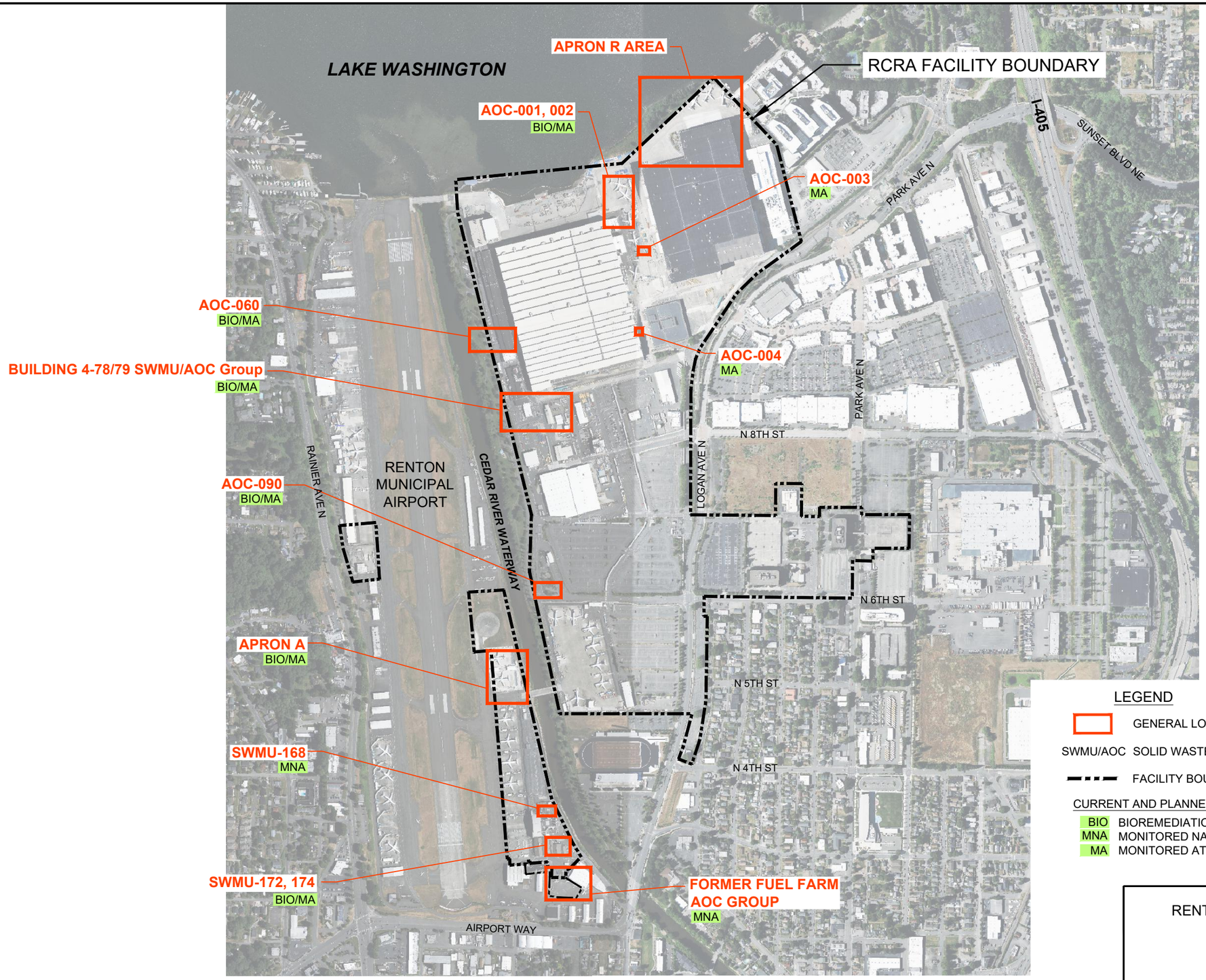
FIGURES



LEGEND

GENERAL LOCATION OF SWMUs, AOCs AND OTHER AREAS

SWMU/AOC SOLID WASTE MANAGEMENT UNIT/AREA OF CONCERN

FACILITY BOUNDARY

CURRENT AND PLANNED CLEANUP REMEDIES:

BIO BIOREMEDIATION
MNA MONITORED NATURAL ATTENUATION
MA MONITORED ATTENUATION

N

0 400 800

APPROXIMATE SCALE IN FEET

BOEING

RENTON SWMU AND AOC LOCATIONS

Boeing Renton Facility
Renton, Washington

By: APS/SD	Date: 10/18/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 1

Plot Date: 10/18/24 - 10:31am Plotted by: USSD715014
Drawing Path: X:\US\USPDX800-POR\ClientData\AMEC US OFFICES\KIRKLAND\PS20203450 - Boeing Renton\dwg_GWMR_Second_Half_2024\ Drawing Name: Figure 1 - Site Map.dwg

BUILDING 5-03

BUILDING 5-50

EAST PERIMETER ROAD

APPROXIMATE LEASE BOUNDARY

CONDITIONAL POC

PP168

PP004

PP169

GW230I
16.97

PP166

PP202

PP002

SWMU-168
(FORMER URE-31)

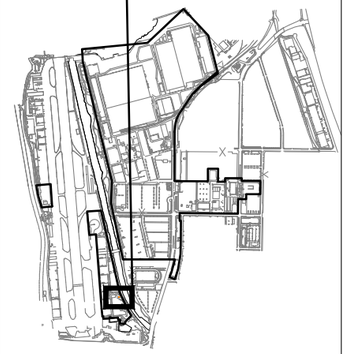
PP165
PP001

PP003

PP167

GW079S

SWMU-168 LOCATION MAP



BOEING RENTON FACILITY MAP

LEGEND

- GW230I 19.98 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- GENERAL DIRECTION OF GROUNDWATER FLOW BASED ON HISTORICAL INFORMATION
- PP171 — PUSH-PROBE SAMPLE LOCATION
- LIMITS OF FORMER EXCAVATION (SECOR 1994)
- APPROXIMATE PROPERTY LINE
- FENCE
- CONDITIONAL POINT OF COMPLIANCE
- HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

N

0 5 10

APPROXIMATE SCALE IN FEET

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 20 FEET IN DEPTH.
   'I' DESIGNATION INDICATES WELL SCREENED GREATER THAN 20 FEET IN DEPTH.

BOEING

SWMU-168 MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS AUGUST 13, 2024 Boeing Renton Facility Renton, Washington

By: SD	Date: 10/09/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 2

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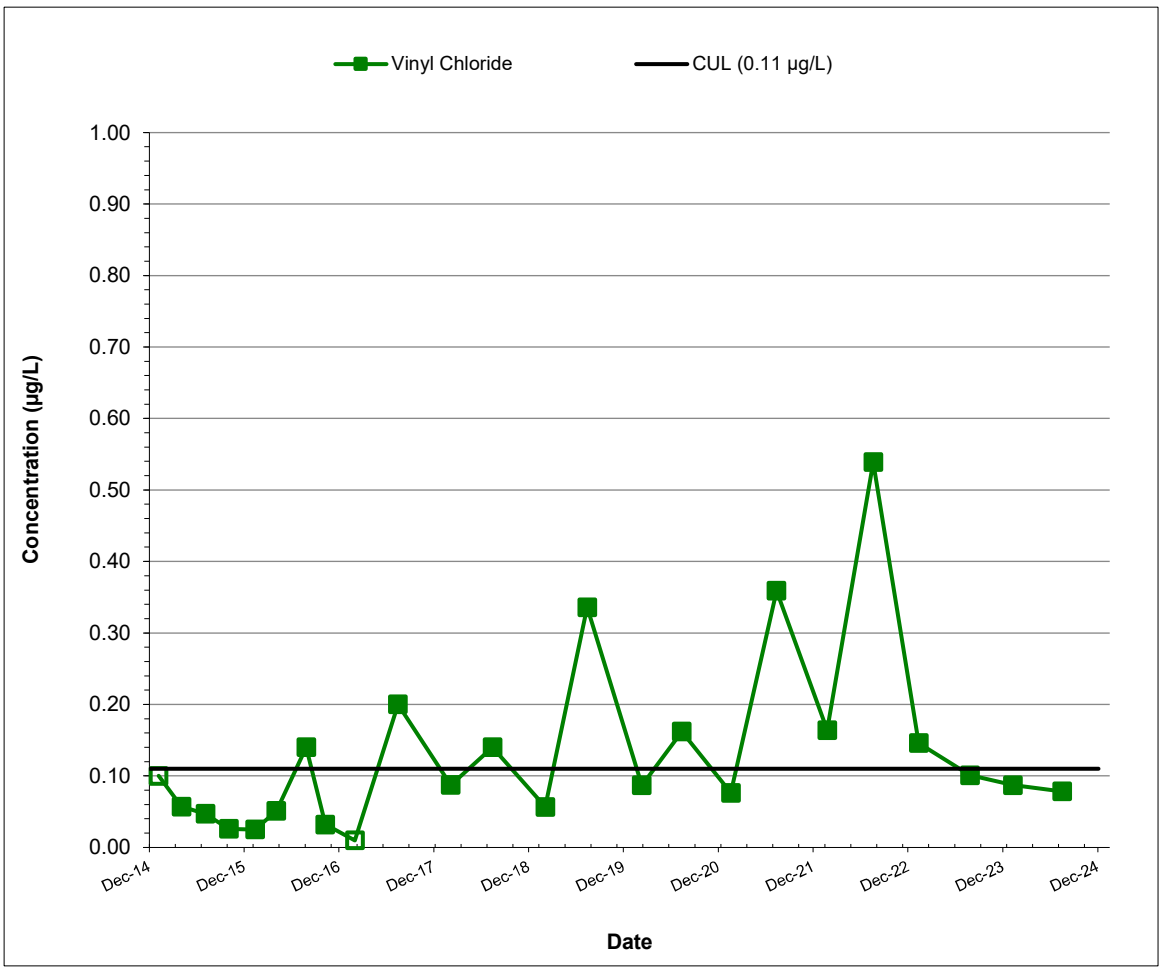
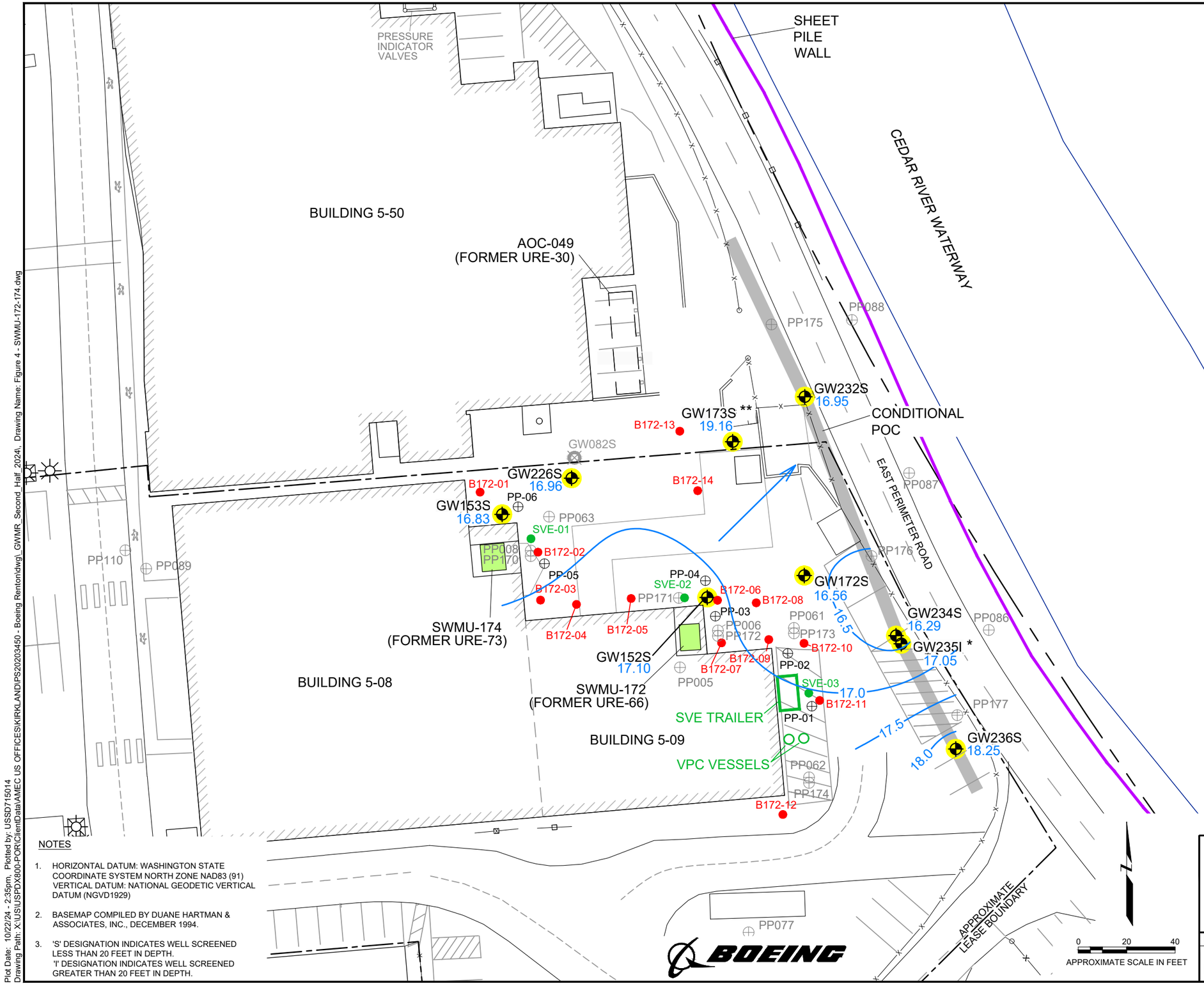


Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

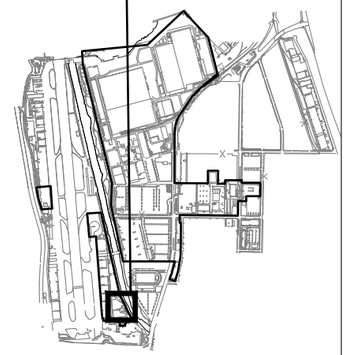
CPOC AREA WELL GW230I

wsp	SWMU-168 TREND PLOT FOR CPOC AREA WELL GW230I Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 3

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\[Boeing_Renton_Charts (3-37) _241022.xlsm]Figure 16 - CPOC



SWMU-172 AND SWMU-174 LOCATION MAP



BOEING RENTON FACILITY MAP

LEGEND

- GW173S 16.38 — 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.
- ** ANOMALOUS READING, SO WATER LEVEL IS NOT USED FOR CONTOURING.
- 16.4 — GROUNDWATER ELEVATION CONTOUR (IN FEET) (DASHED WHERE INFERRED)
- GENERAL GROUNDWATER FLOW DIRECTION
- GW082S — DECOMMISSIONED MONITORING WELL
- APPROXIMATE PROPERTY LINE
- FENCE
- CONDITIONAL POINT OF COMPLIANCE
- APPROXIMATE LOCATION OF SHEET PILE WALL
- SOLID WASTE MANAGEMENT UNIT (SWMU)
- 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 AUGUST 13 & 15, 2024 Boeing Renton Facility Renton, Washington

By: SD	Date: 10/22/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 4

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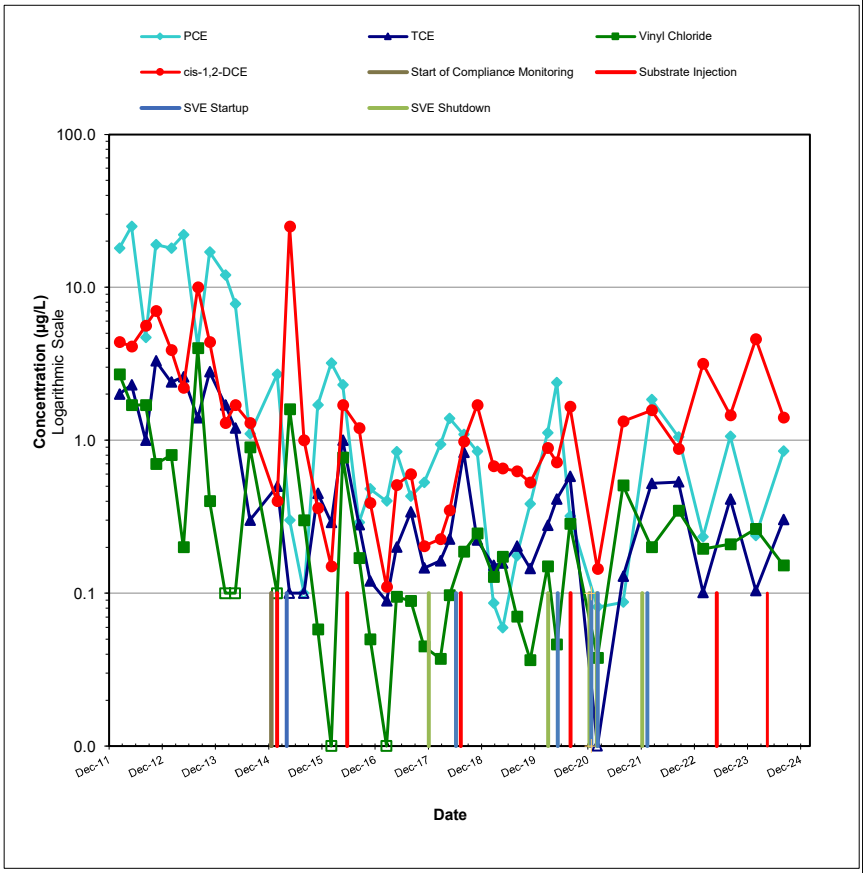
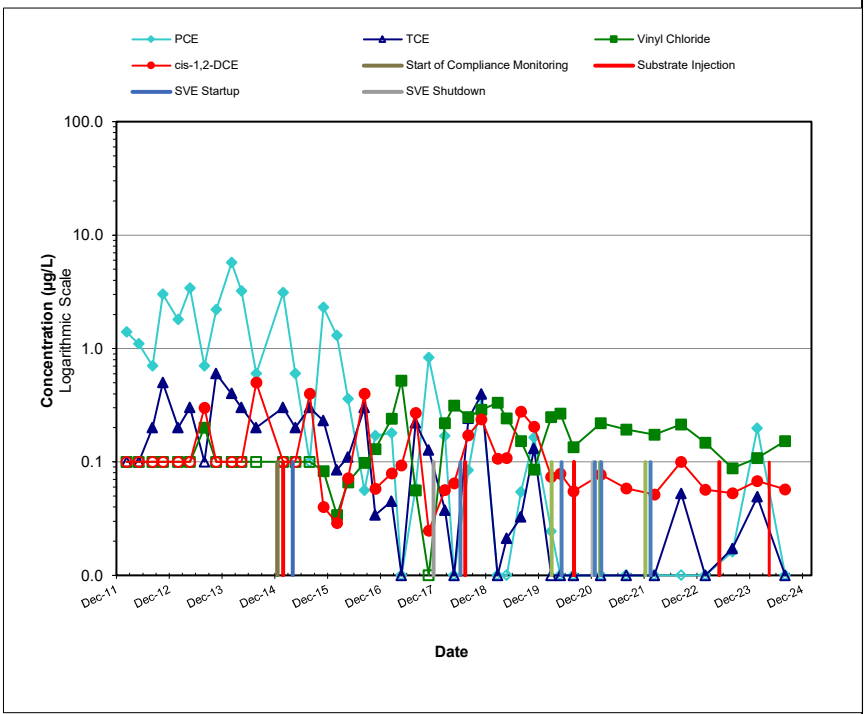


SOURCE AREA WELL GW152S



SOURCE AREA WELL GW153S

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

wsp	SWMU-172 AND SWMU-174 TREND PLOTS FOR SOURCE AREA WELLS GW152S AND GW153S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 5

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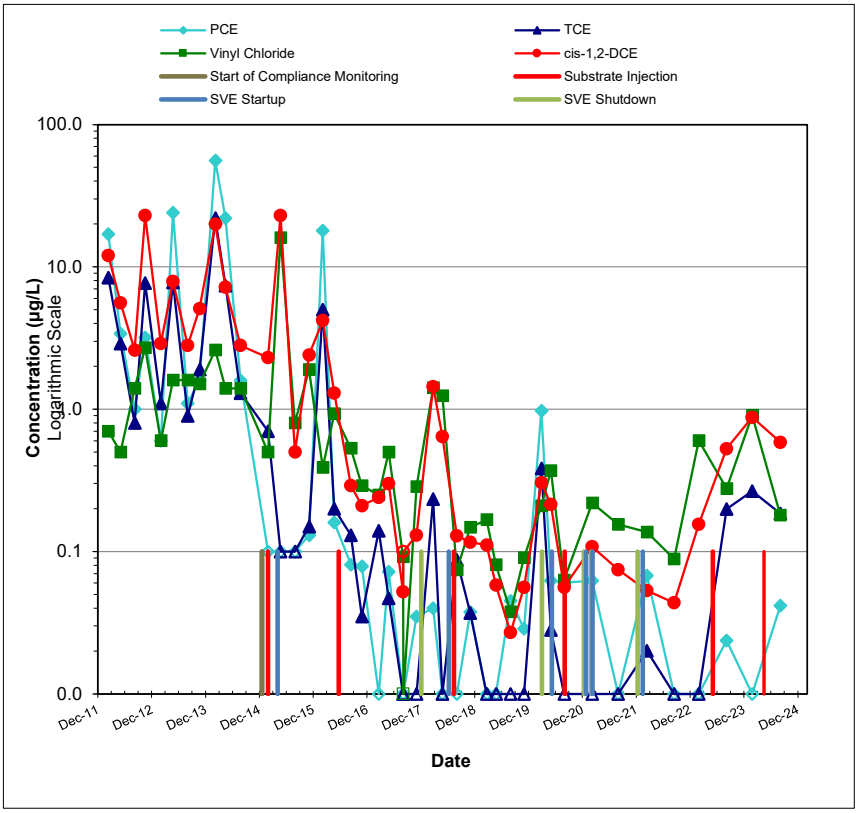
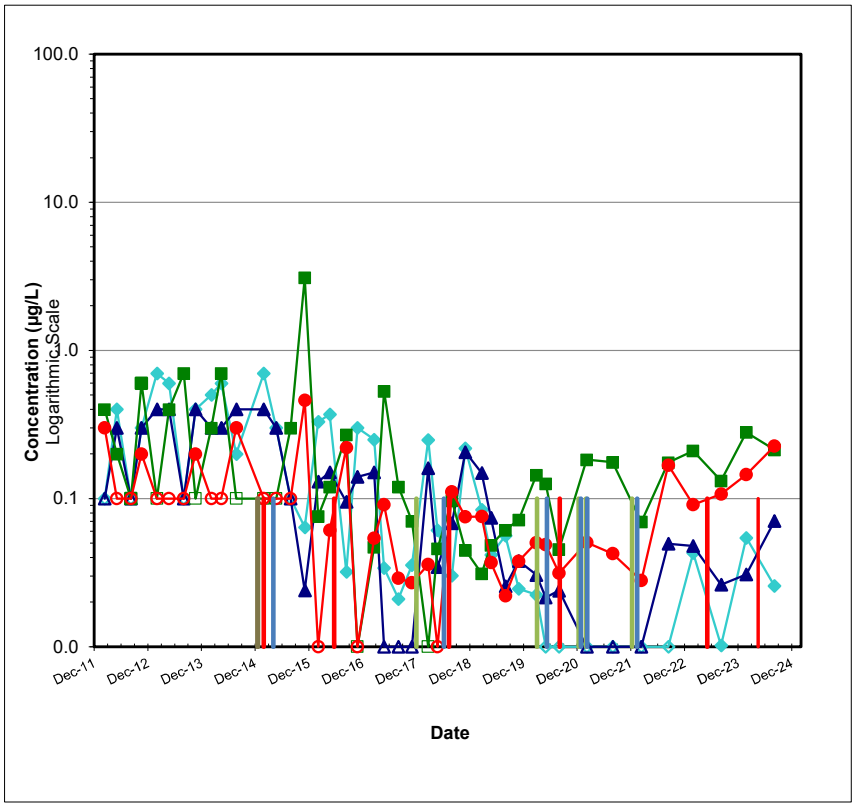


DOWNGRADIENT PLUME AREA WELL GW172S



DOWNGRADIENT PLUME AREA WELL GW173S

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

wsp	SWMU-172 AND SWMU-174 TREND PLOTS FOR DOWNGRADIENT PLUME AREA WELLS GW172S AND GW173S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 6

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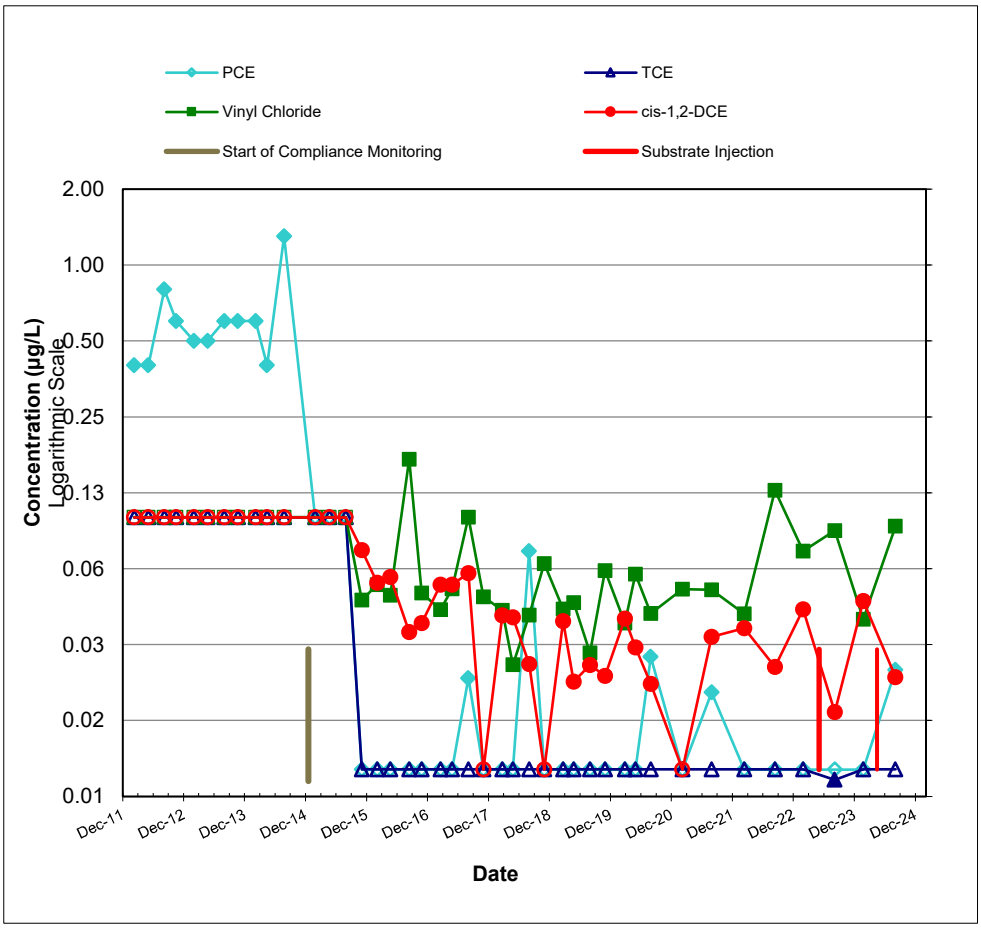

Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

DOWNGRADIENT PLUME AREA WELL GW226S

wsp	SWMU-172 AND SWMU-174 TREND PLOT FOR DOWNGRADIENT PLUME AREA WELL GW226S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 7

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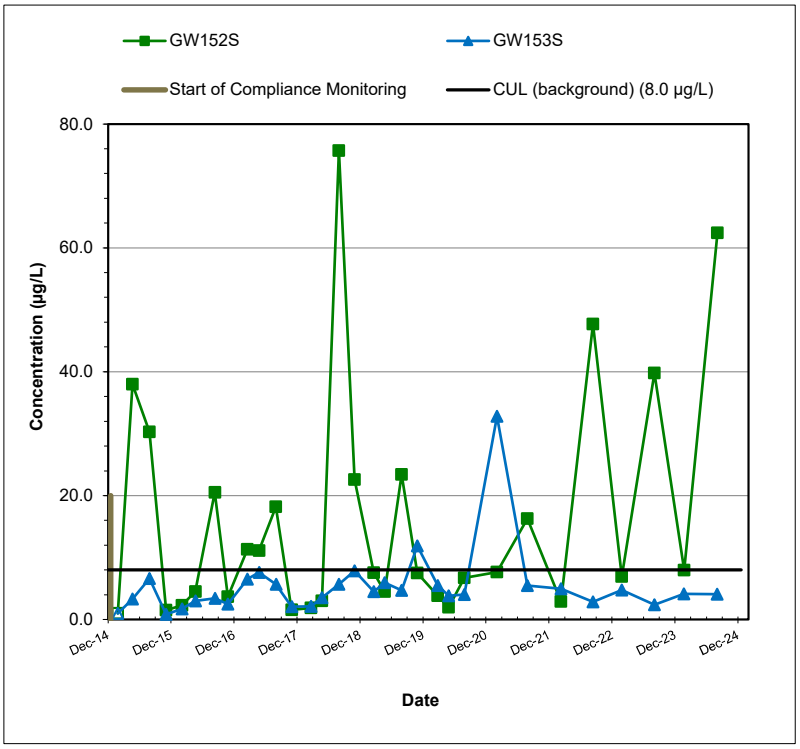
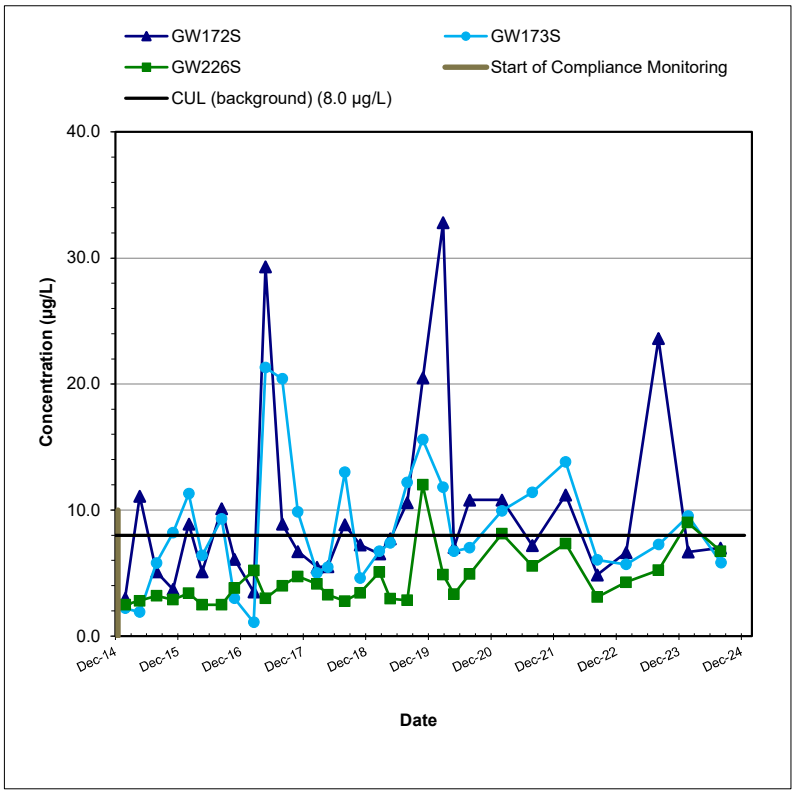


TOTAL ARSENIC IN SOURCE AREA WELLS



TOTAL ARSENIC IN DOWNGRADIENT PLUME AREA WELLS

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

wsp	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. PS20203450 Figure 8

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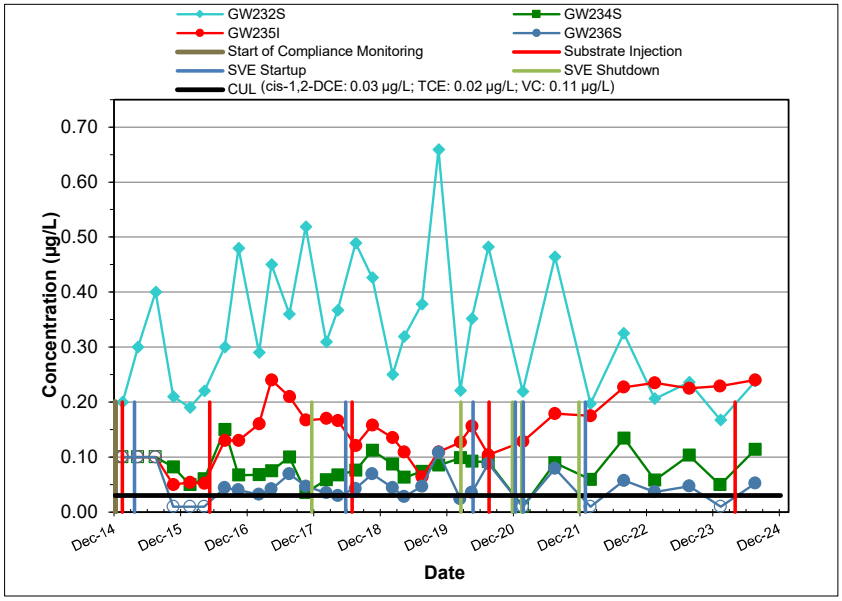
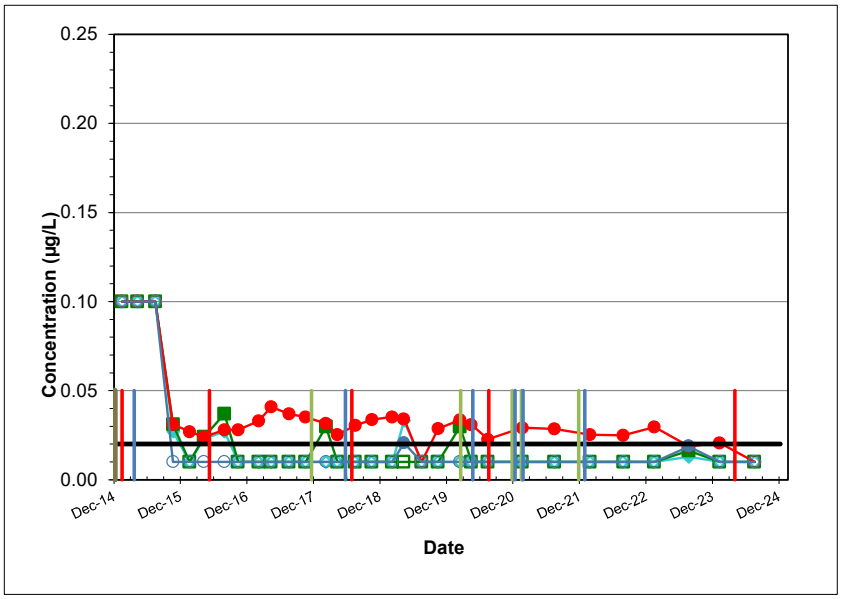


cis-1,2-DCE



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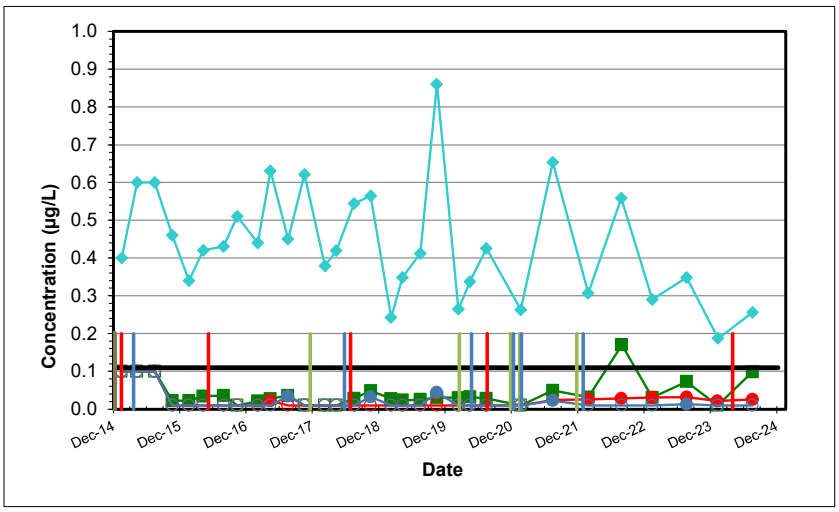

Vinyl Chloride

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

wsp	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. PS2020345 0 Figure 9

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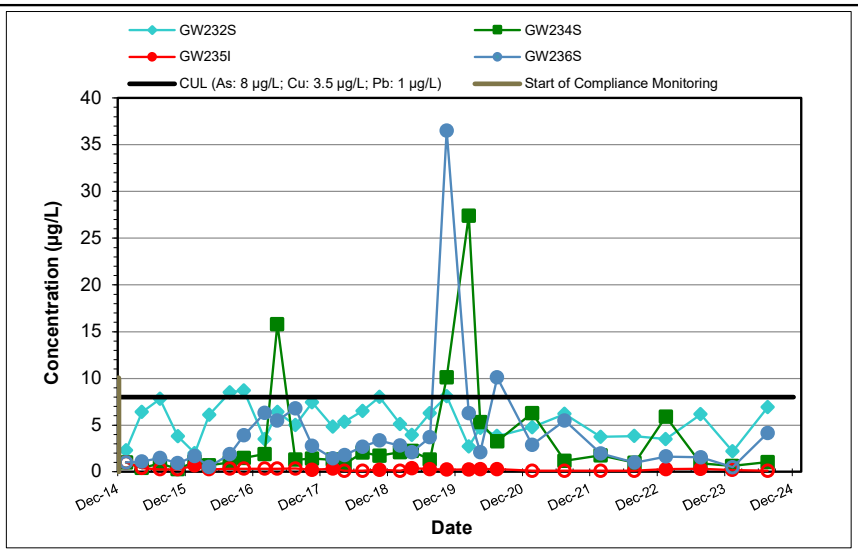
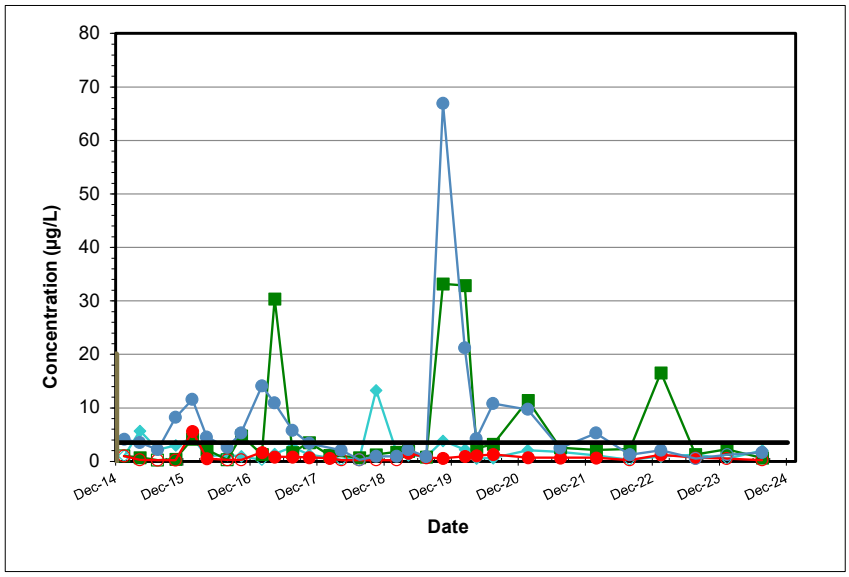
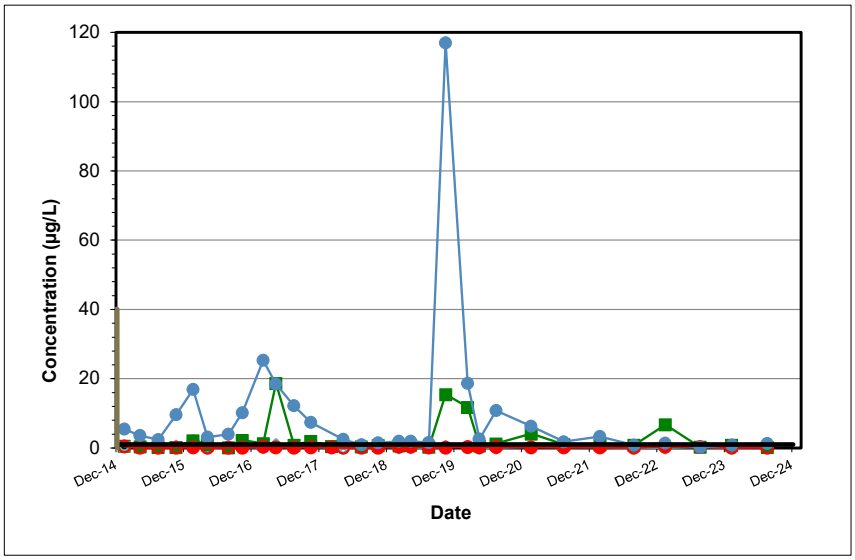


Arsenic



Copper



Lead

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

wsp	SWMU-172 AND SWMU-174 TREND PLOTS FOR ARSENIC, COPPER AND LEAD IN CPOC AREA WELLS Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 10

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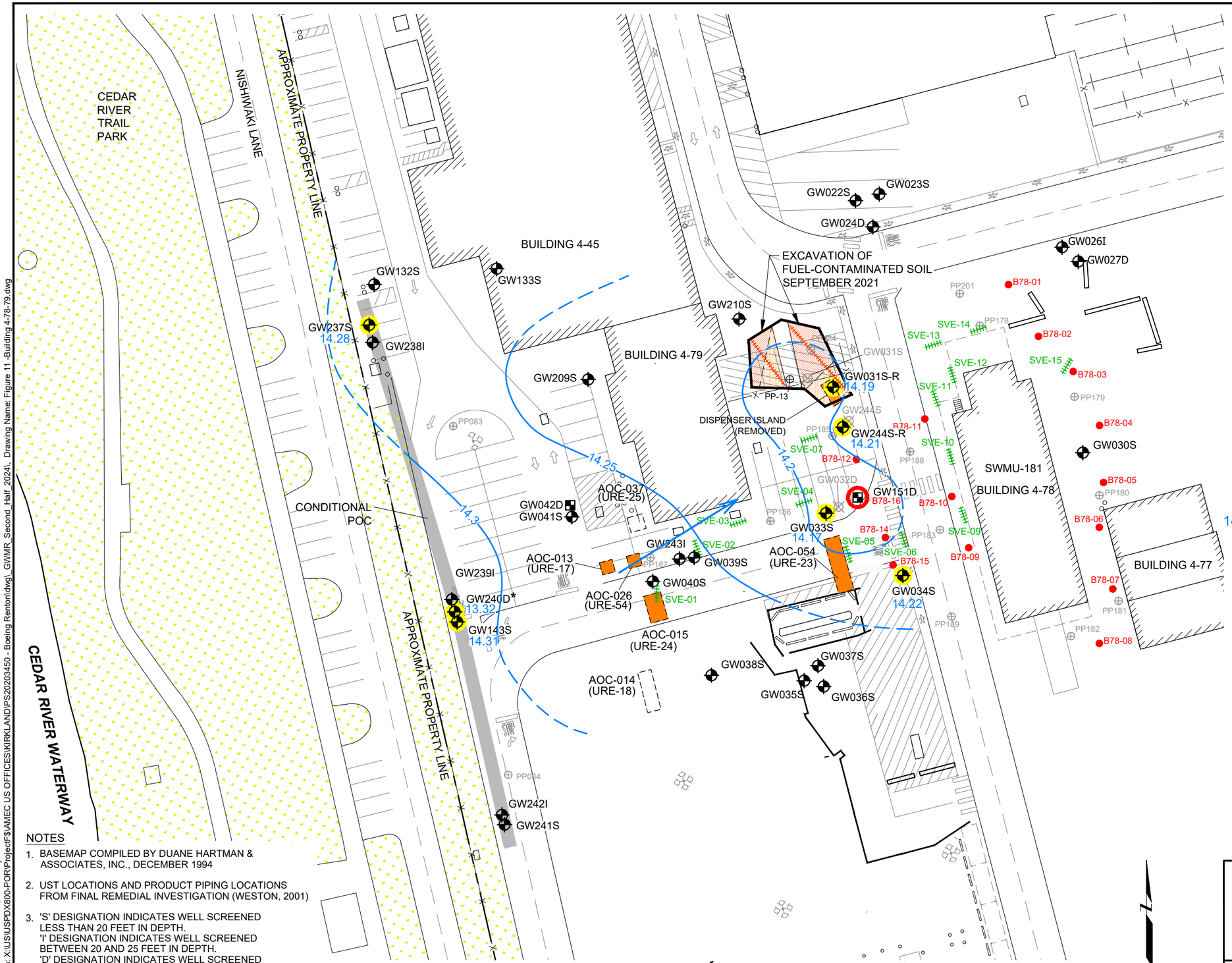

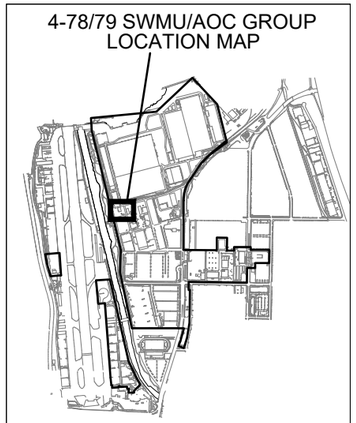

LEGEND

- GW033S 14.20 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- NM — NOT MEASURED: SURVEY INFORMATION FOR REPLACEMENT WELLS NOT YET AVAILABLE.
- * — WELL SCREENED IN LOWER PORTION OF AQUIFER, SO WATER LEVEL IS NOT USED FOR CONTOURING.
- 14.30 — GROUNDWATER ELEVATION CONTOUR (IN FEET) (DASHED WHERE INFERRED)
- GENERAL GROUNDWATER FLOW DIRECTION
- GW042D — EXTRACTION WELL
- GW032D — DECOMMISSIONED MONITORING WELL
- SVE-15 — HORIZONTAL SVE WELL
- HORIZONTAL BIOREMEDIATION INJECTION 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.
4. THE GROUNDWATER FLOW DIRECTION SHOWN IS BASED ON HISTORICAL GROUNDWATER DATA.

BOEING

0 25 50
APPROXIMATE SCALE IN FEET

BUILDING 4-78/79 SWMU/AOC GROUP MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS AUGUST 14, 2024
Boeing Renton Facility
Renton, Washington

By: SD	Date: 10/09/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 11

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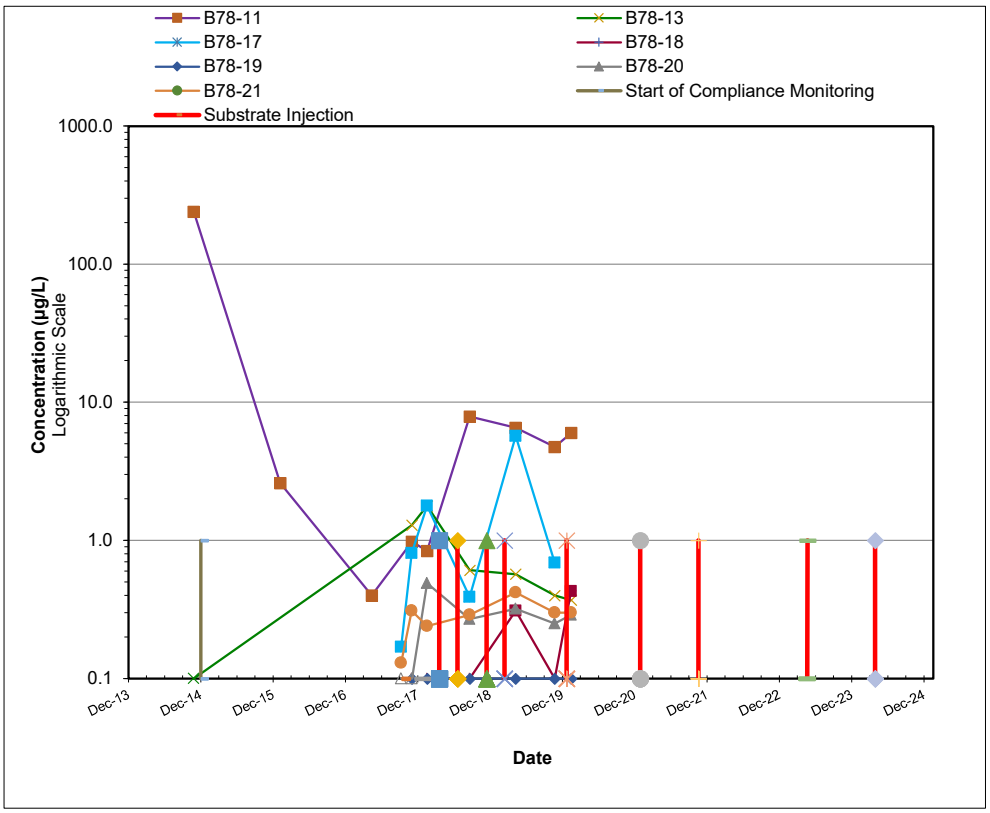

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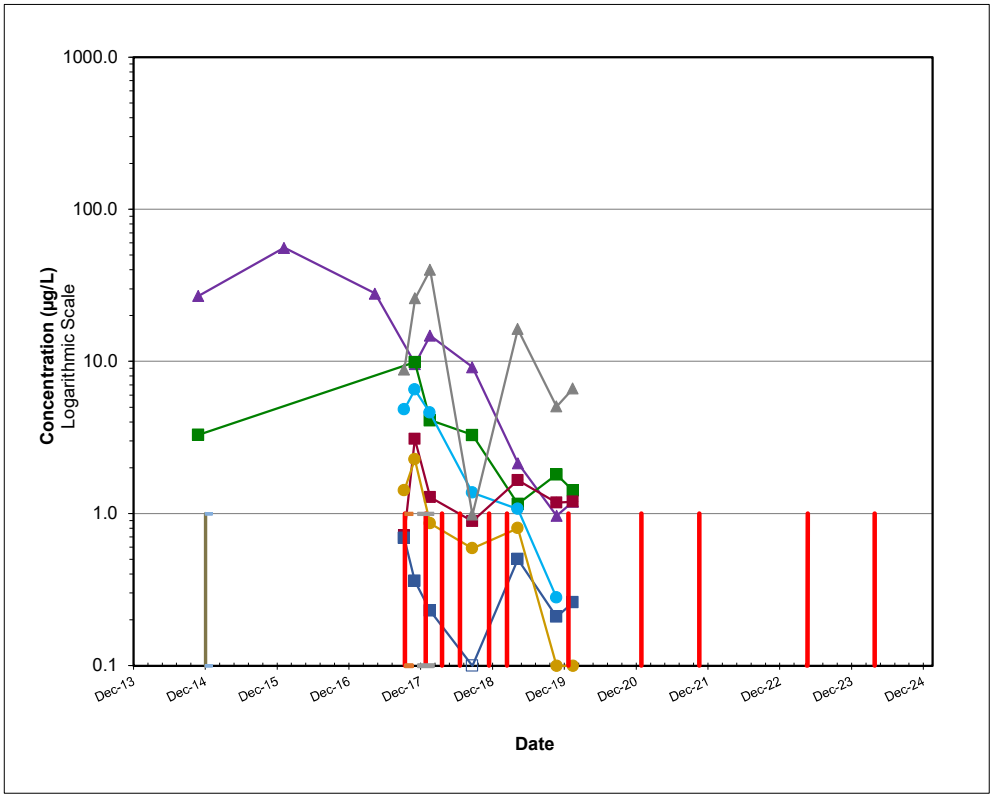

Benzene

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

wsp	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. PS20203450 Figure 12

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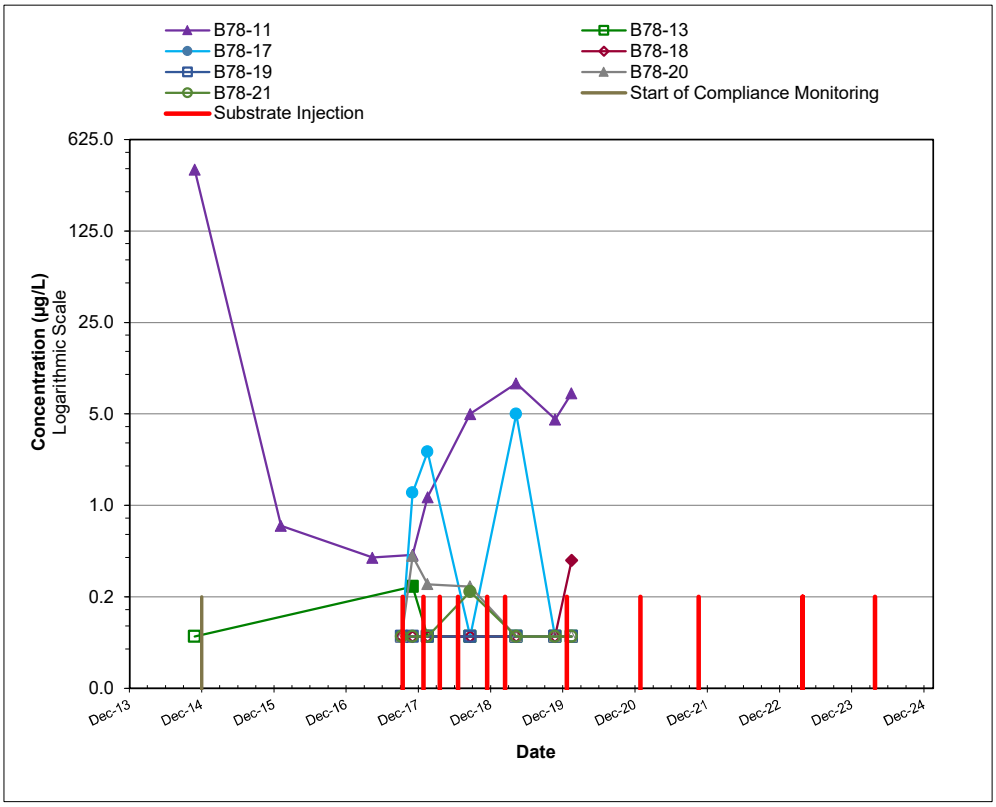

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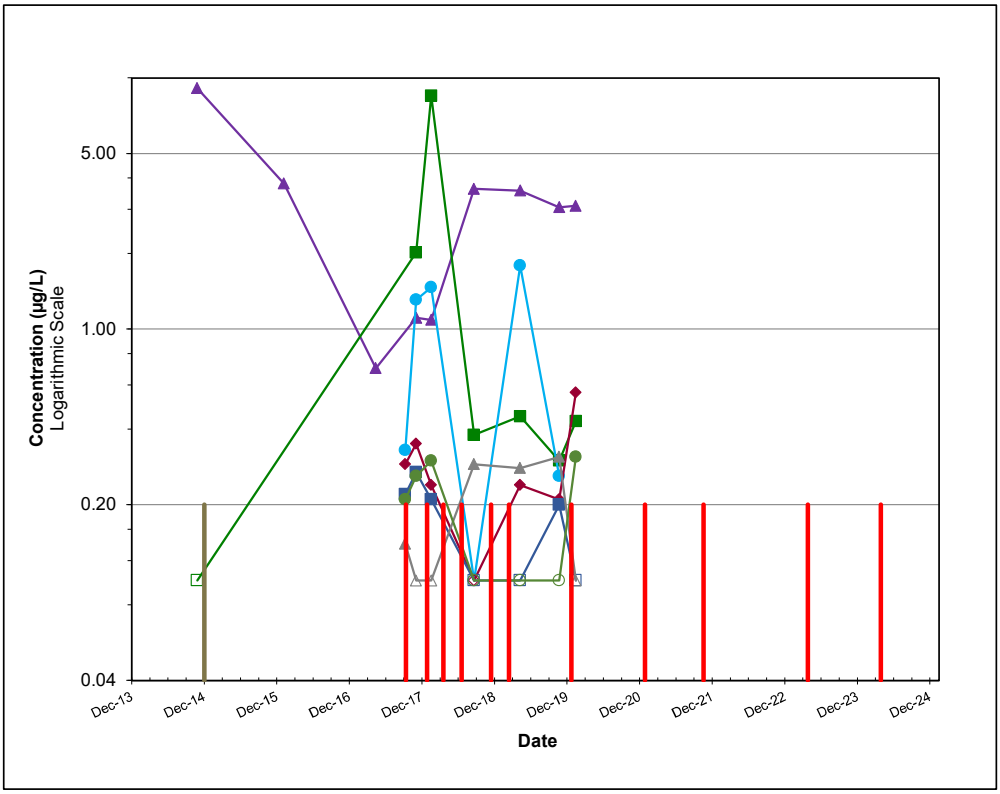
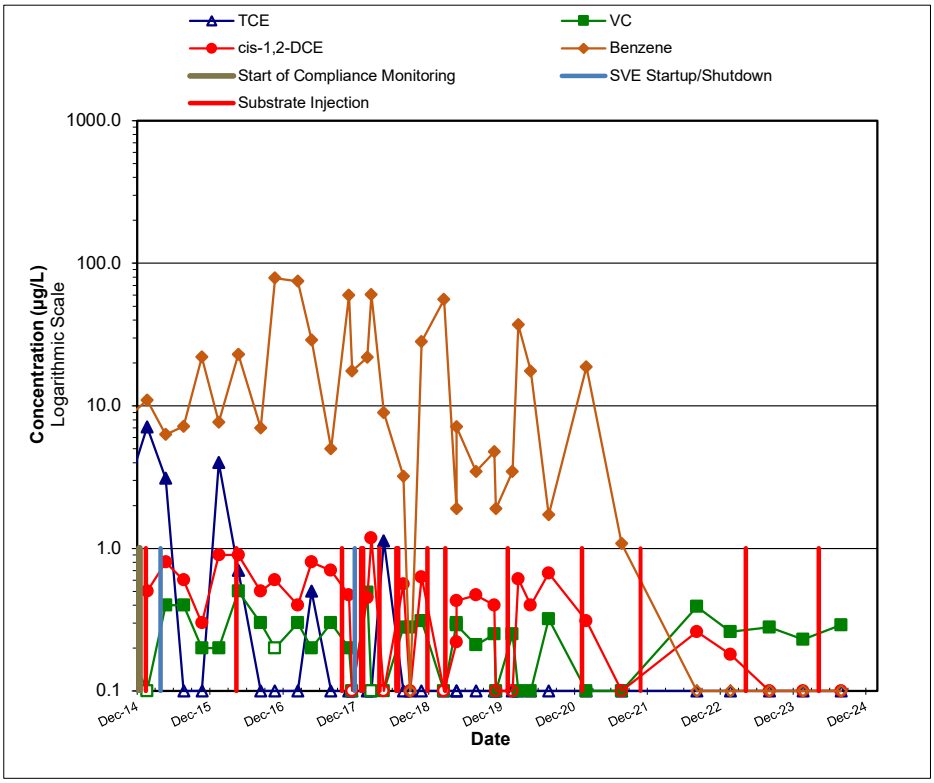


VC

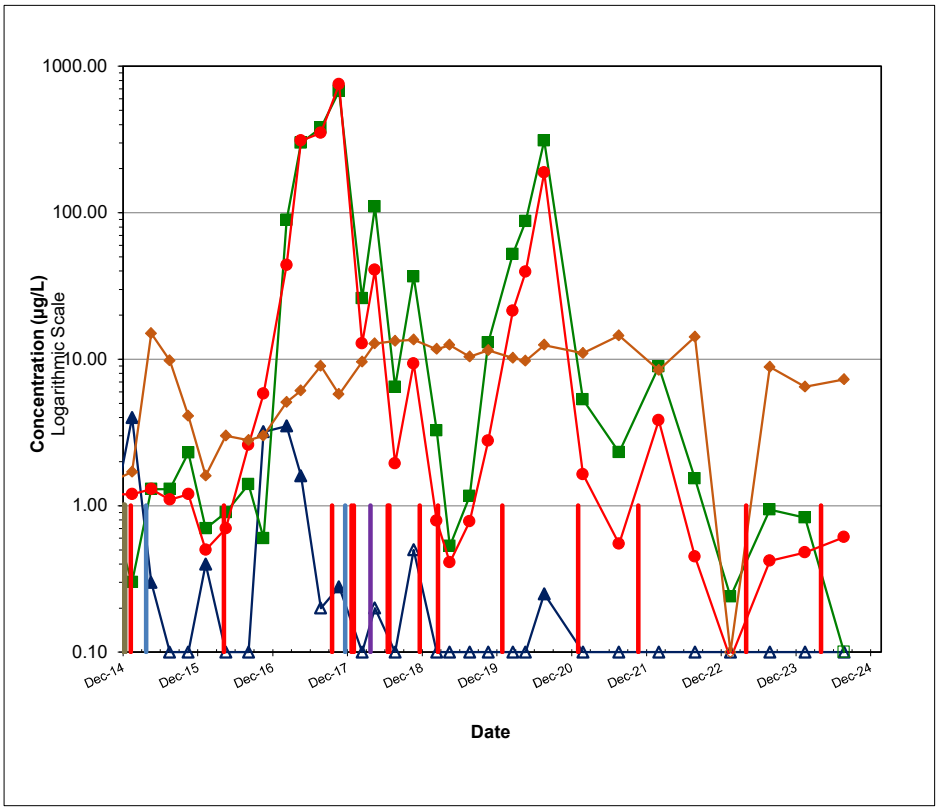
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

wsp	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR TRICHLOROETHENE AND VINYL CHLORIDE IN INJECTION WELLS Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 13

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



SOURCE AREA WELL GW031S

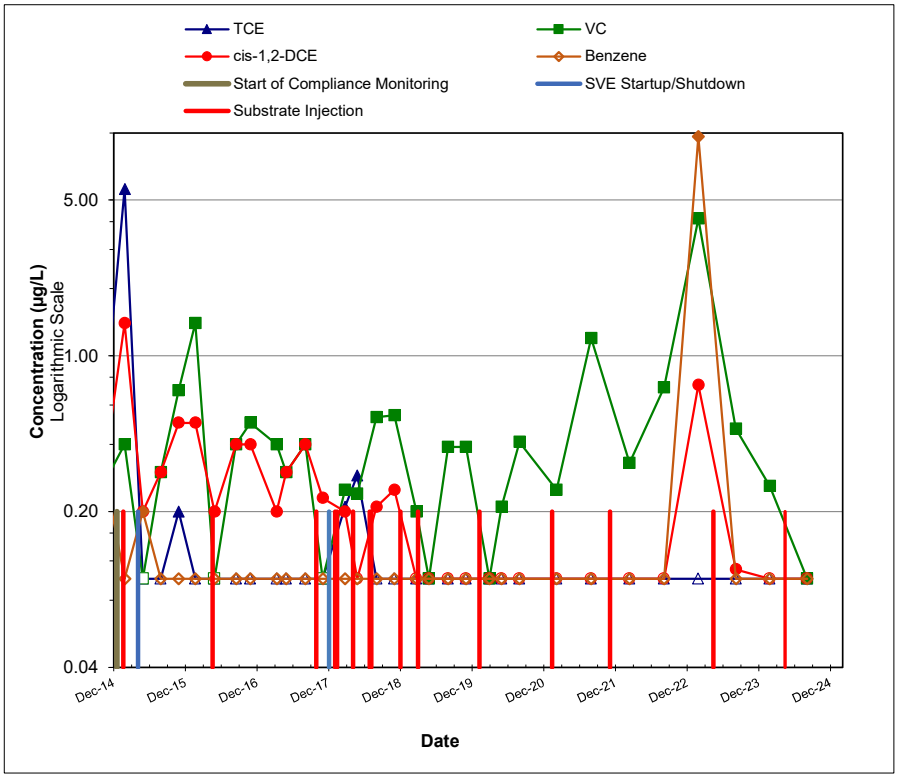


SOURCE AREA WELL GW033S

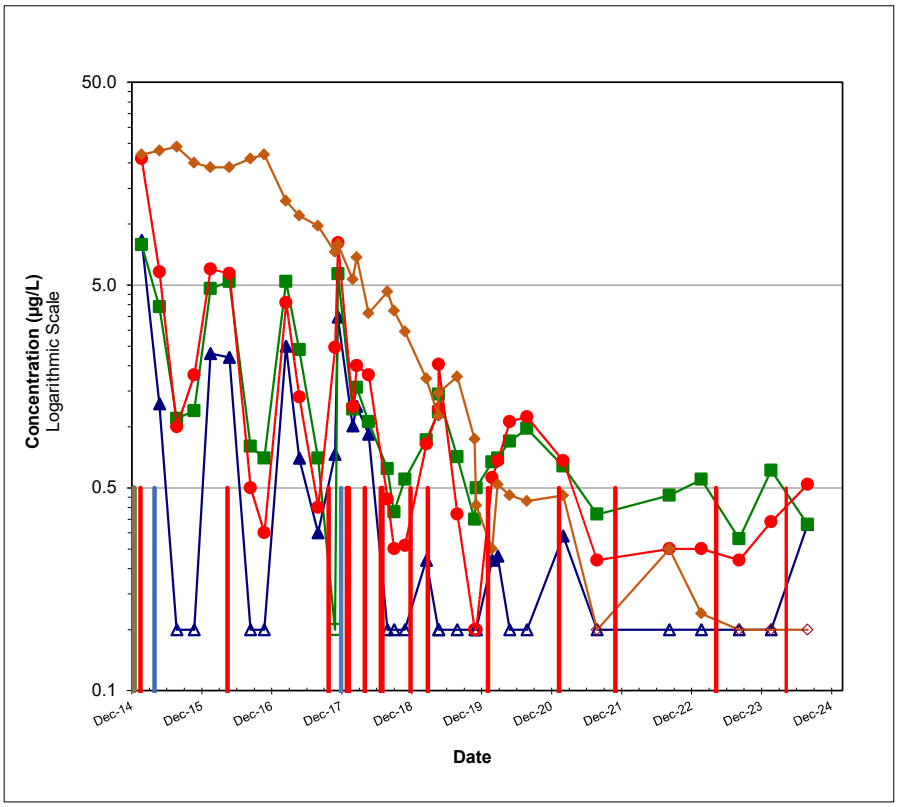
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

wsp	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR SOURCE AREA WELLS GW031S AND GW033S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 14

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



SOURCE AREA WELL GW034S

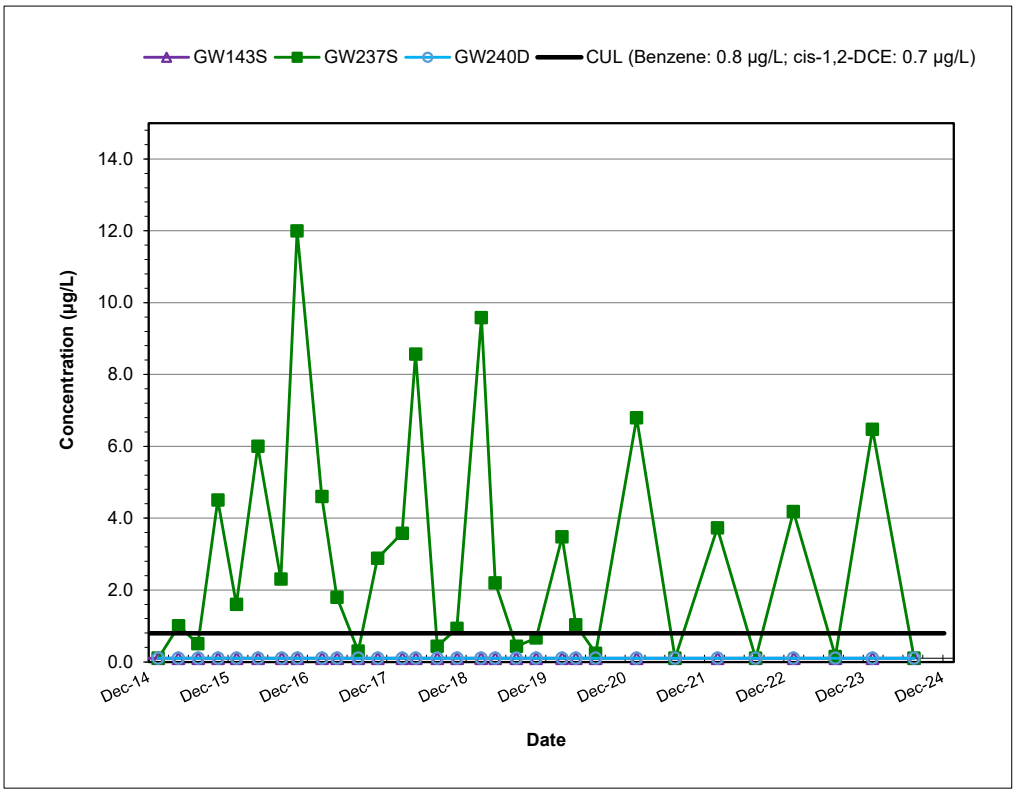


SOURCE AREA WELL GW244S

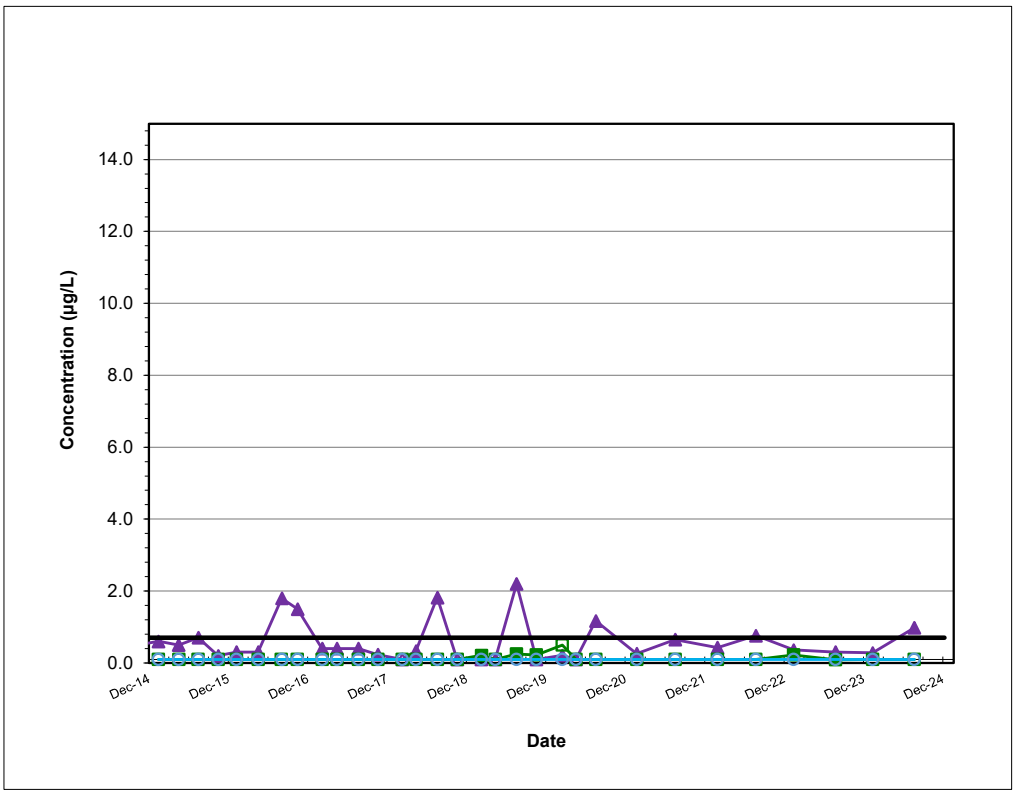
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

wsp	BLDG 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR SOURCE AREA WELLS GW034S AND GW244S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 15

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



Benzene

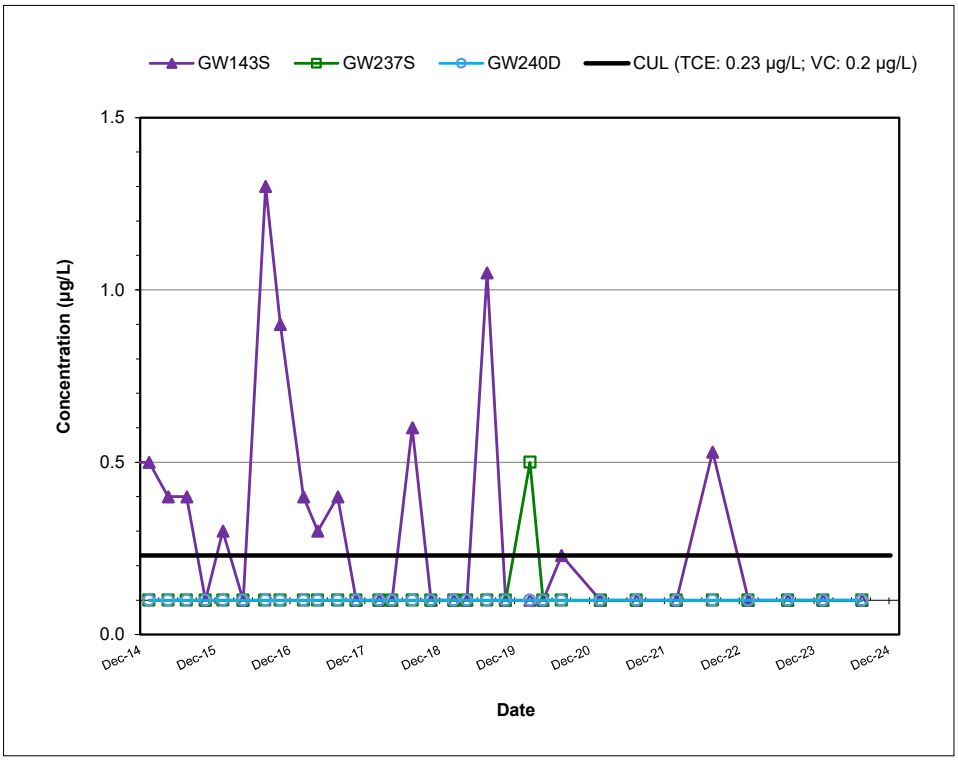


cis-1,2-DCE

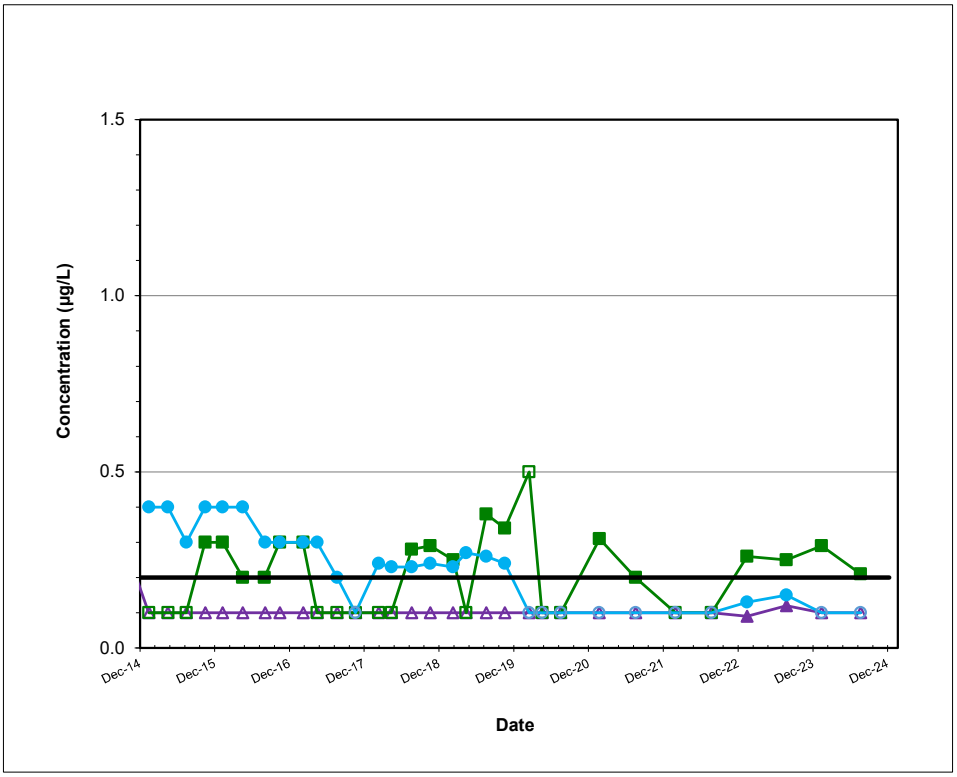
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

wsp	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. PS20203450 Figure 16

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



TCE



VC

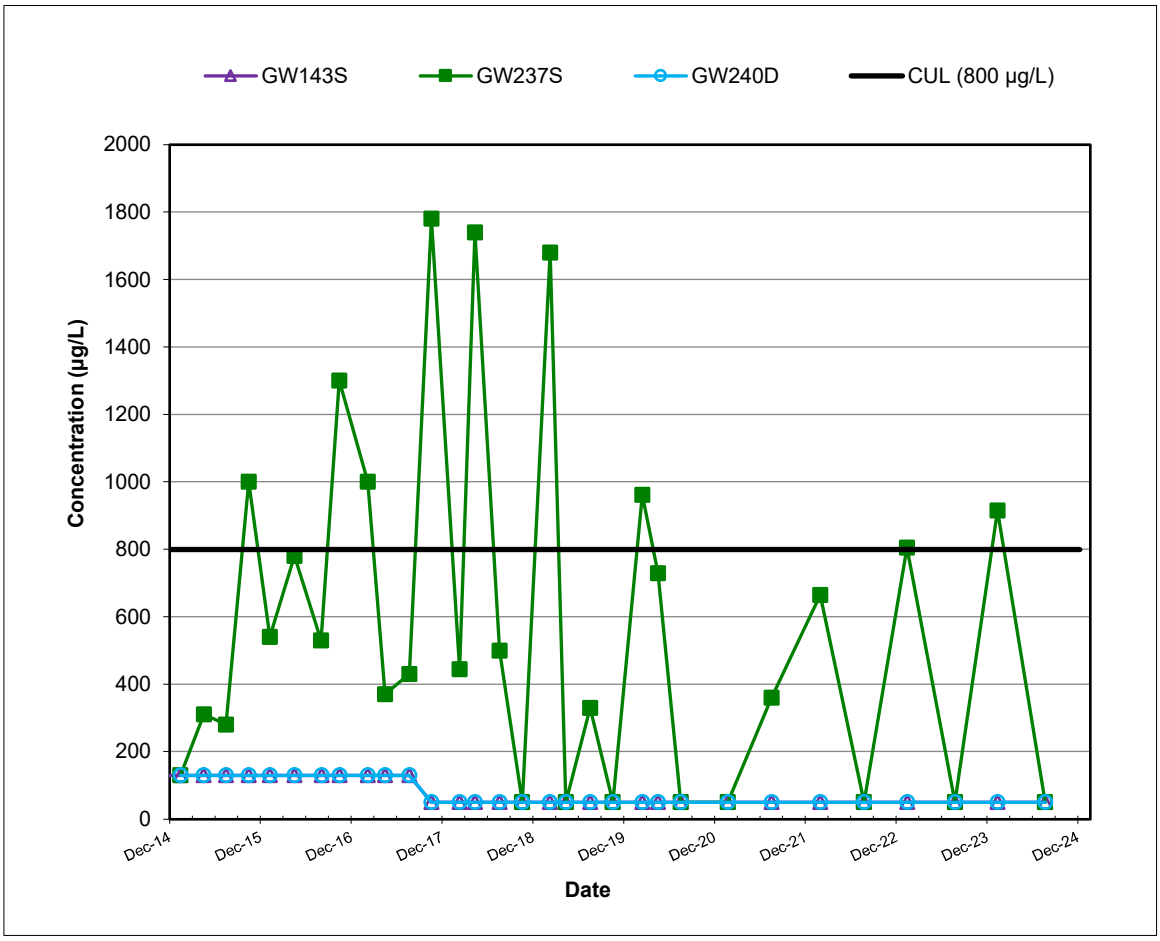
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

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. PS20203450

Figure 17

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37)_241022.xlsm

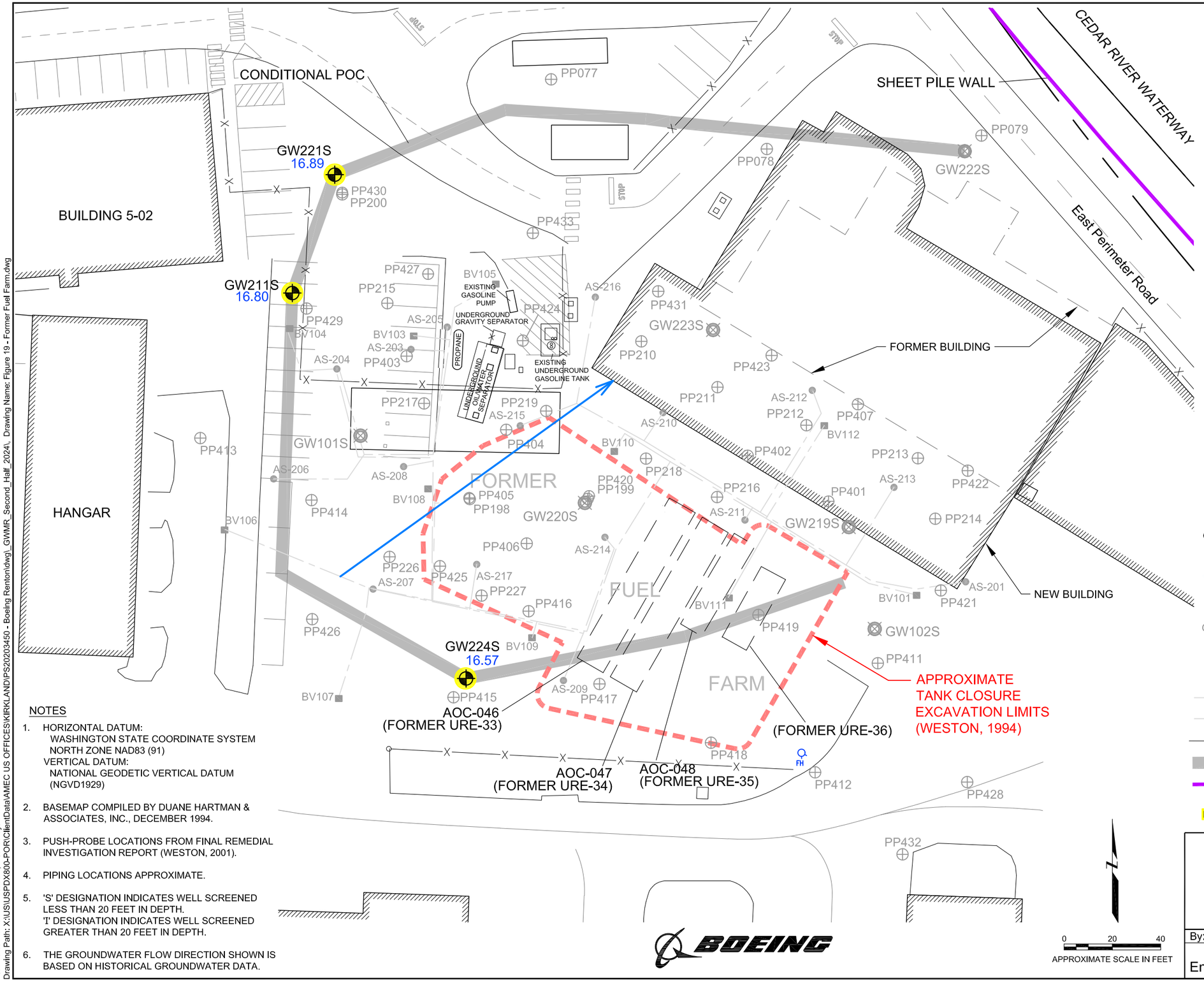


TPH as Gasoline

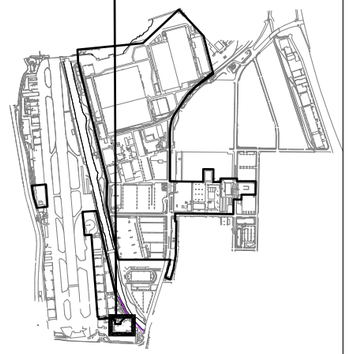
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

	BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR TPH AS GASOLINE IN CPOC AREA WELLS Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 18

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



FORMER FUEL FARM AOC GROUP LOCATION MAP



BOEING RENTON FACILITY MAP

LEGEND

- GW224S 16.44 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- GENERAL DIRECTION OF GROUNDWATER FLOW BASED ON HISTORICAL INFORMATION
- PP042 — PUSH PROBE LOCATION
- GW222S — DECOMMISSIONED 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
- APPROXIMATE LOCATION OF SHEET PILE WALL

HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

NOTES

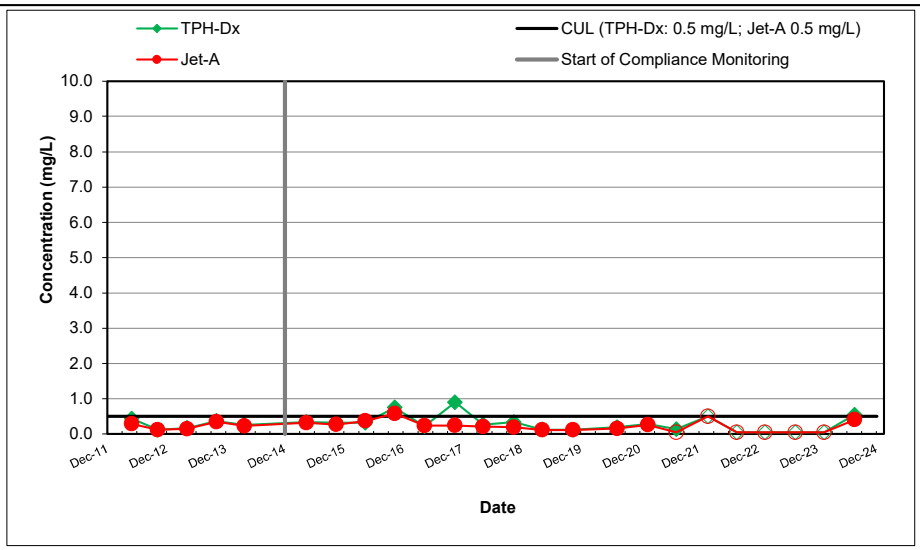
1. HORIZONTAL DATUM:
   WASHINGTON STATE COORDINATE SYSTEM
   NORTH ZONE NAD83 (91)
   VERTICAL DATUM:
   NATIONAL GEODETIC VERTICAL DATUM
   (NGVD1929)
2. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994.
3. PUSH-PROBE LOCATIONS FROM FINAL REMEDIAL INVESTIGATION REPORT (WESTON, 2001).
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

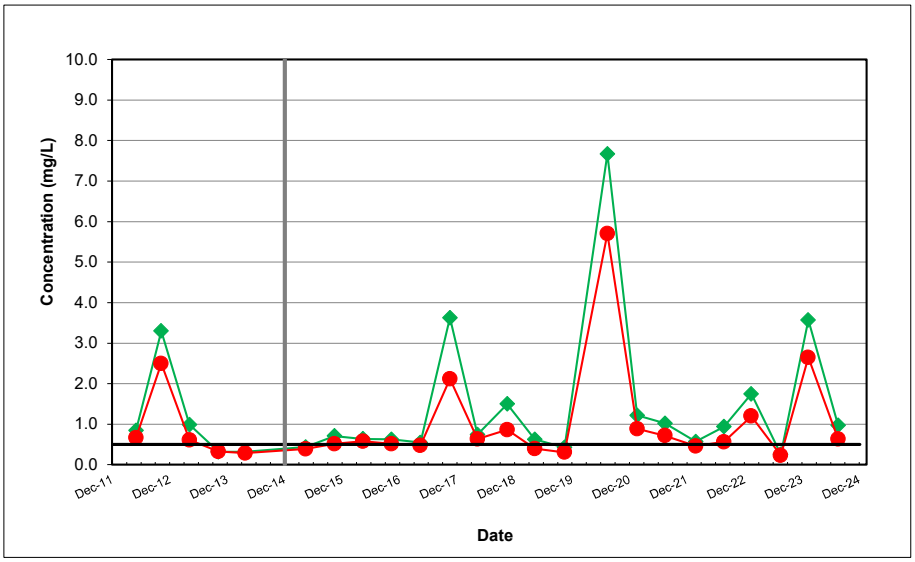
FORMER FUEL FARM AOC GROUP MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS AUGUST 15, 2024 Boeing Renton Facility Renton, Washington

By: SD	Date: 10/18/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 19

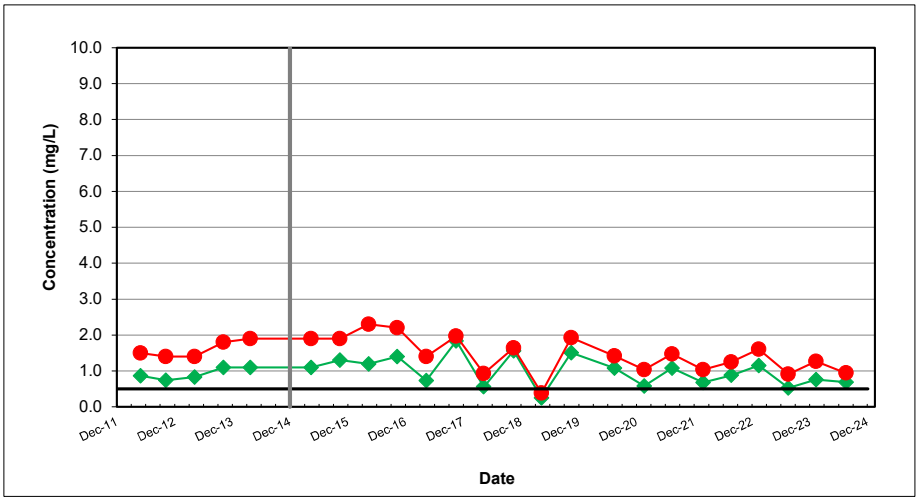
Plot Date: 10/18/24 - 10:58am, Plotted by: USSD715014
Drawing Path: X:\US\USPDX800-POR\ClientData\AMEC US OFFICES\KIRKLAND\PS20203450 - Boeing Renton\dwg_GWMR_Second_Half_2024\
Drawing Name: Figure 19 - Former Fuel Farm.dwg



CPOC WELL GW211S



CPOC WELL GW221S

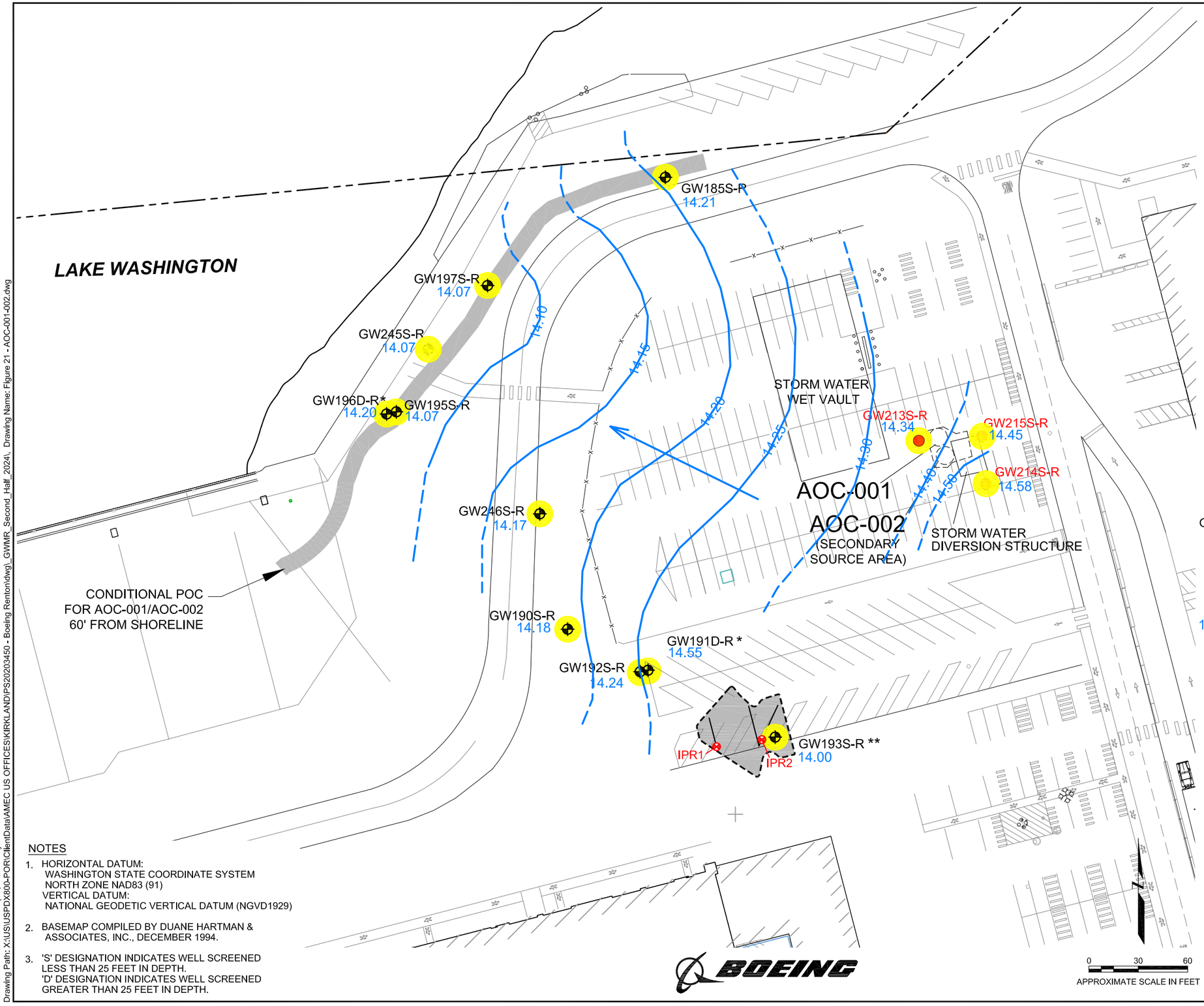


CPOC WELL GW224S

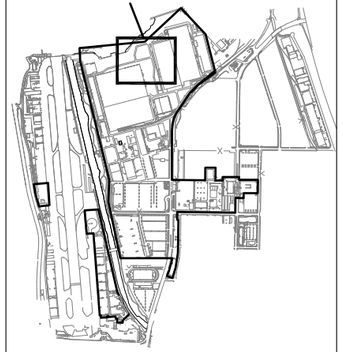
Note: Non-detected values shown at one-half the reporting limit and with an open symbol. Reporting limits were elevated for February 2022 results in GW211S.

wsp	FORMER FUEL FARM AOC GROUP TREND PLOTS FOR CPOC AREA WELLS GW211S, GW221S, AND GW224S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 20

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



AOC-001 AND AOC-002
LOCATION MAP



BOEING RENTON
FACILITY MAP

LEGEND

GW195S 13.92 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)

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

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

14.1 — GROUNDWATER ELEVATION CONTOUR (IN FEET) (DASHED WHERE INFERRED)

GENERAL GROUNDWATER FLOW DIRECTION

GW215S — EXISTING ELECTRON DONOR INJECTION WELL

IPR1 — EXISTING INJECTION PIPE RISER

APPROXIMATE PROPERTY LINE

FENCE LINE

APPROXIMATE LIMIT OF NOVEMBER 2005 SOURCE AREA EXCAVATION

AOC-001, AOC-002 CONDITIONAL POINT OF COMPLIANCE

HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

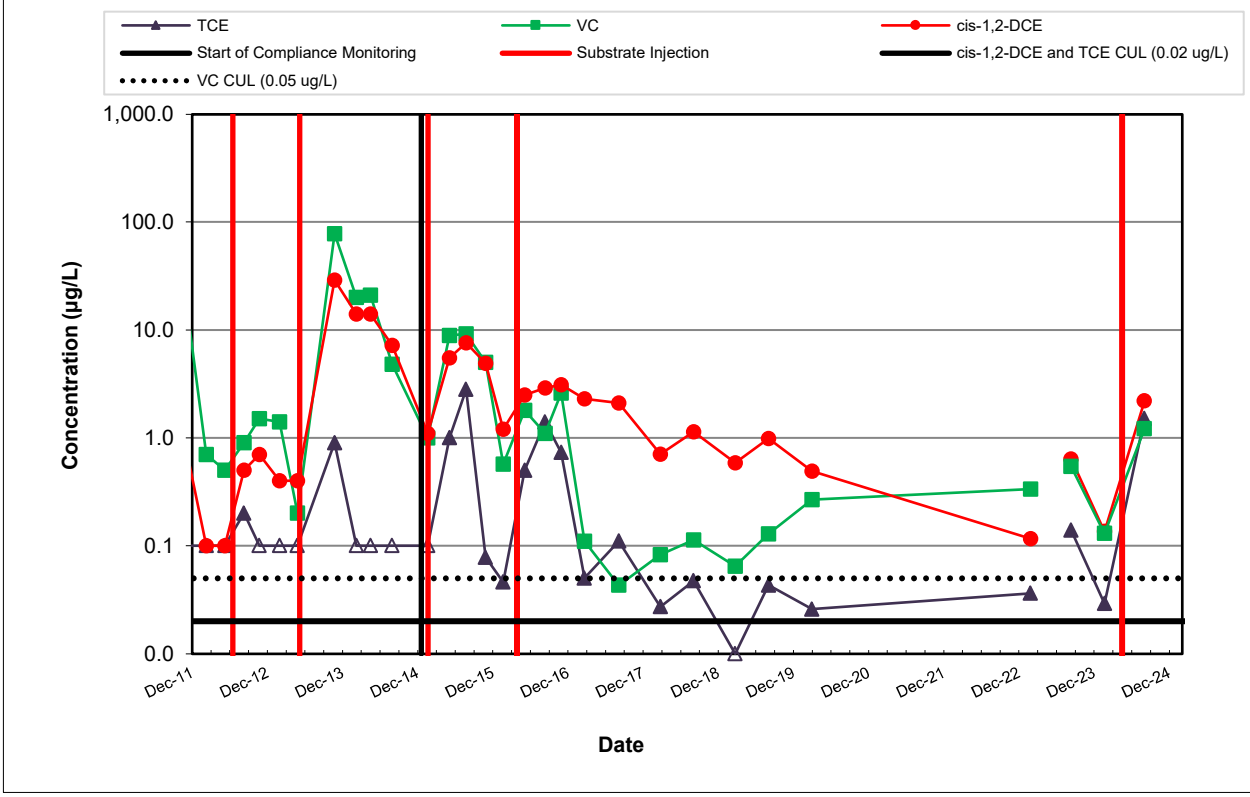
NOTES

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. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 25 FEET IN DEPTH.
   'D' DESIGNATION INDICATES WELL SCREENED GREATER THAN 25 FEET IN DEPTH.

AOC-001 AND AOC-002
MONITORING WELL LOCATIONS
AND GROUNDWATER ELEVATIONS
AUGUST 12, 2024
Boeing Renton Facility
Renton, Washington

By: SD	Date: 10/31/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 21

Plot Date: 10/31/24 - 12:05pm. Plotted by: USSD715014
Drawing Path: X:\US\USPDX800-PORV\ClientData\AMEC US OFFICES\KIRKLAND\PS20203450 - Boeing Renton\dwg_GWMR_Second_Half_2024\, Drawing Name: Figure 21 - AOC-001-002.dwg

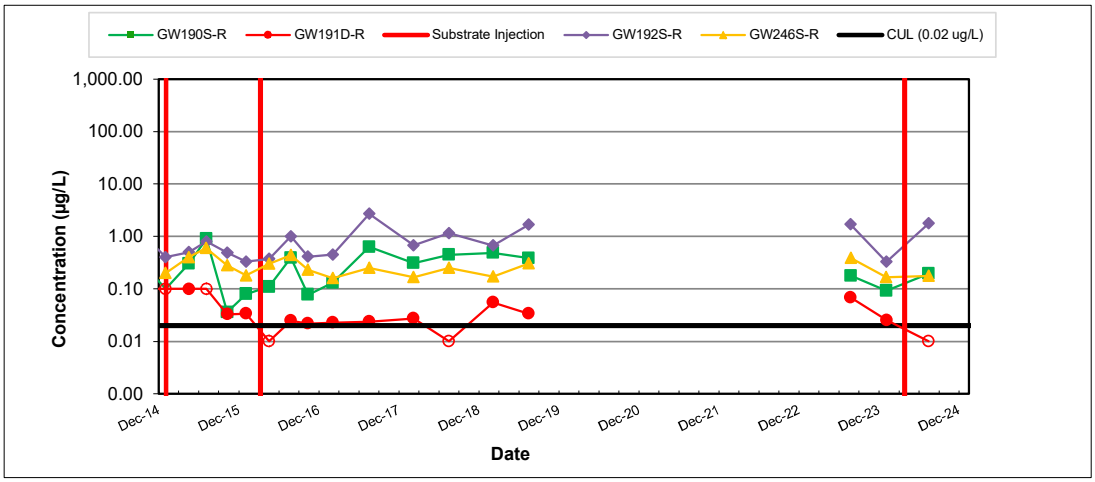


SOURCE AREA WELL GW193S-R

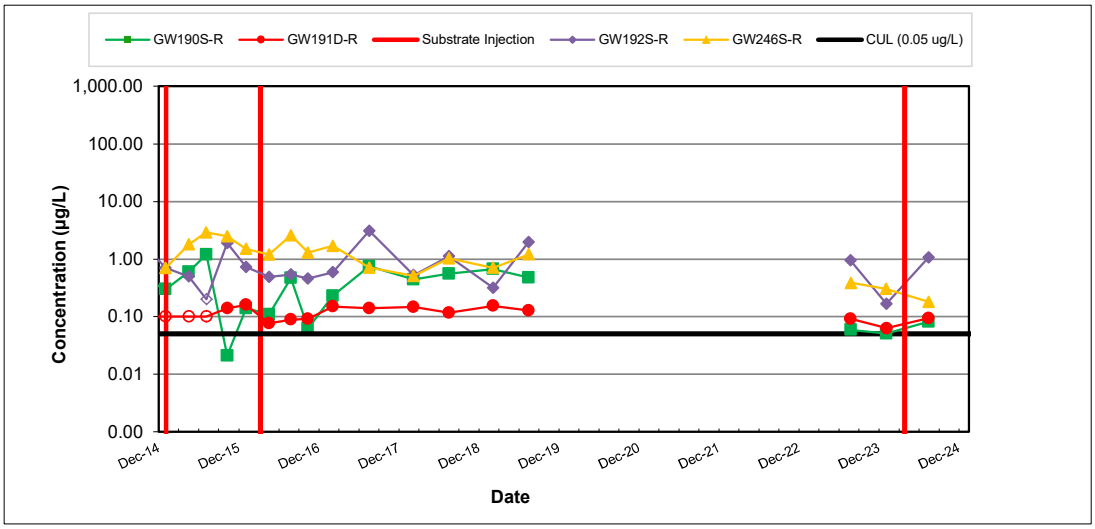
Note: non-detected values shown at one-half the reporting limit and are graphed with an open symbol. This well was replaced in July 2023; results from the new well are shown separated from original well results.

WSP	AOC-001 AND -002 TREND PLOT FOR SOURCE AREA WELL GW193S Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 22

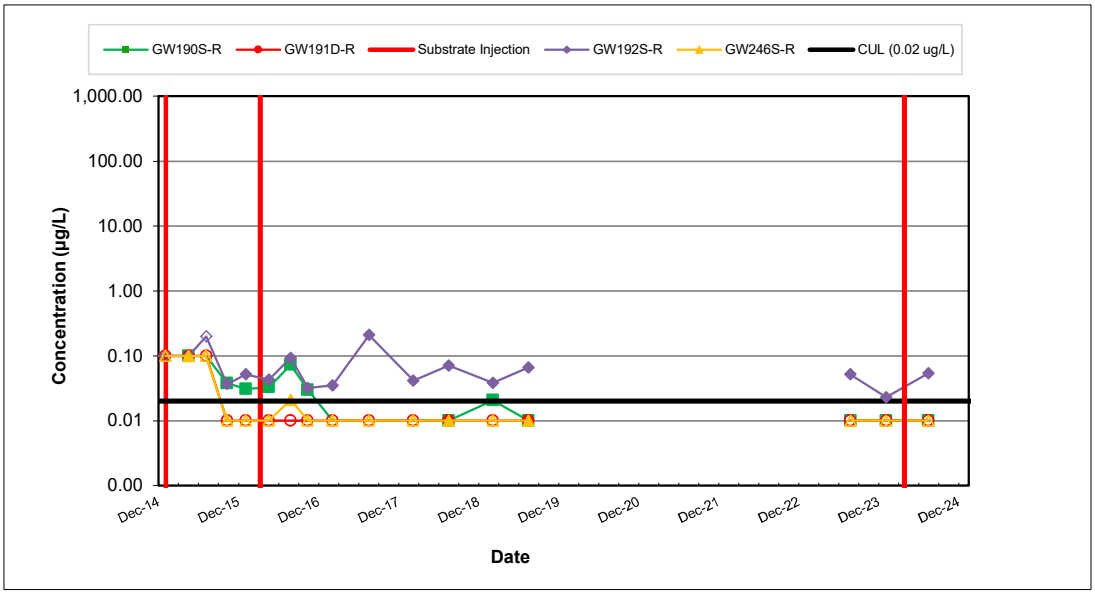
C:\Users\USAL717121\Desktop\20240429\Chelsea\Figures\



cis-1,2-DCE



VC

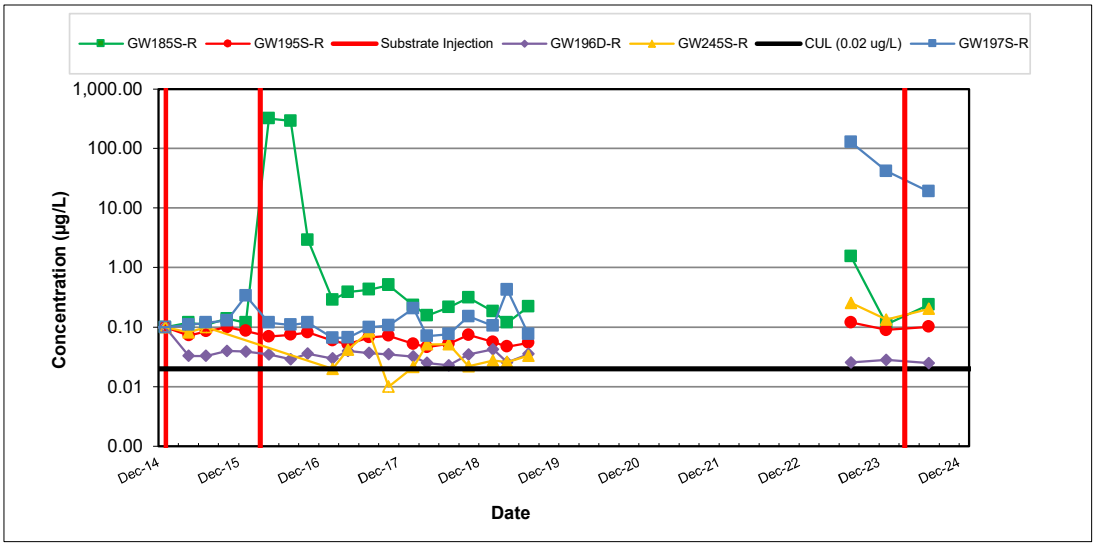


TCE

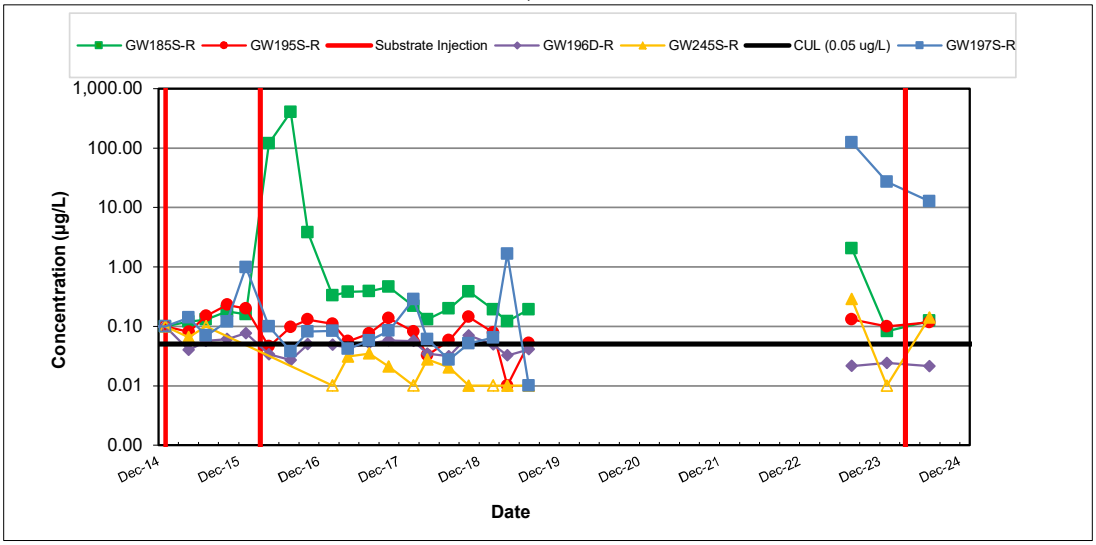
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol. Wells in this area were replaced in July 2023; results from the new wells are shown separated from original well results.

wsp	AOC-001 AND -002 TREND PLOTS FOR CIS-1,2-DICHLOROETHENE, TRICHLOROETHENE, AND VINYL CHLORIDE IN DOWNGRADIENT AREA WELLS Boeing Renton Facility Renton, Washington	Project No. 8888 Figure 23

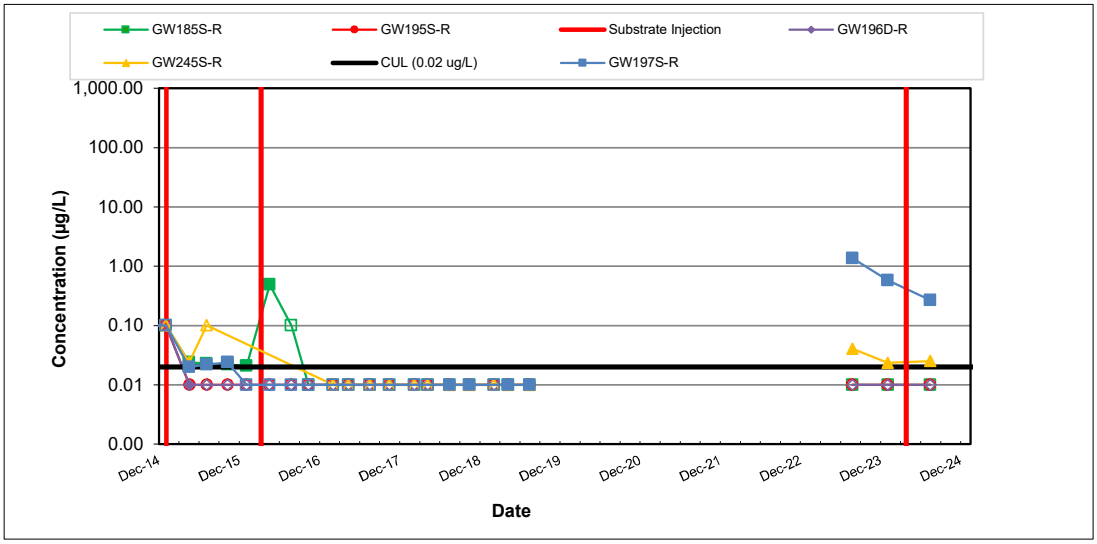
X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



cis-1,2-DCE



VC



TCE

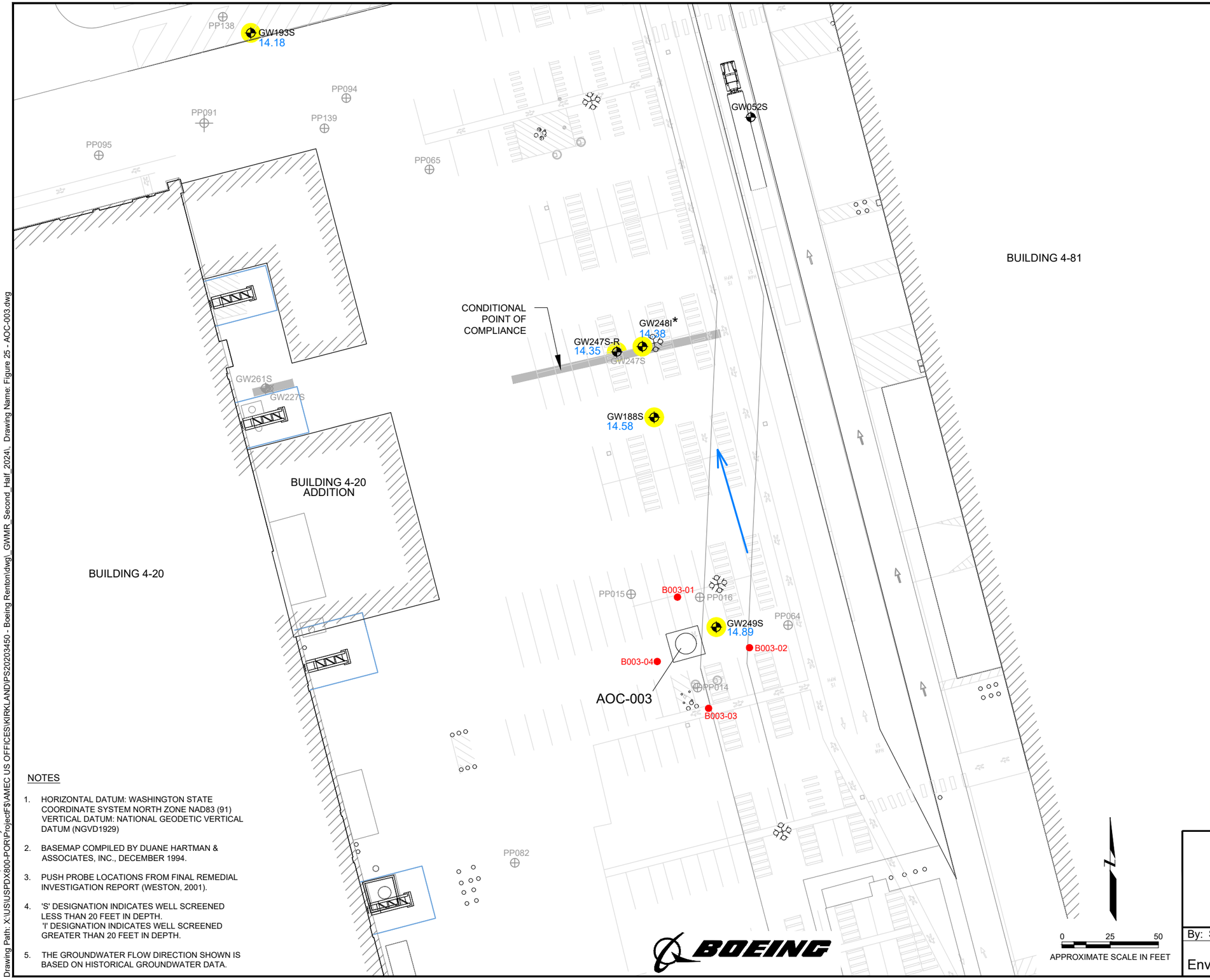
Note: non-detected values shown at one-half the reporting limit and graphed with an open symbol. Wells in this area were replaced in July 2023; results from the new wells are shown separated from original well results.

AOC-001 AND -002 TREND PLOTS FOR CIS-1,2-DICHLOROETHENE, TRICHLOROETHENE, AND VINYL CHLORIDE IN CPOC AREA WELLS
Boeing Renton Facility
Renton, Washington

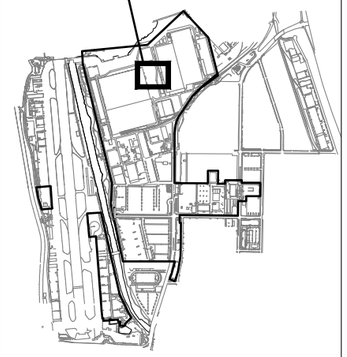
Project No. 8888

Figure 24

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



AOC-003
LOCATION MAP



BOEING RENTON
FACILITY MAP

LEGEND

- GW249S 16.52 — 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.
- GENERAL DIRECTION OF GROUNDWATER FLOW BASED ON HISTORICAL INFORMATION
- CONDITIONAL POINT OF COMPLIANCE
- GW227S — DECOMMISSIONED MONITORING WELL
- B003-01 — BIOREMEDIATION INJECTION WELL
- PP011 — PUSH PROBE SAMPLING LOCATION
- HIGHLIGHTED — WELLS INCLUDED IN MONITORING NETWORK

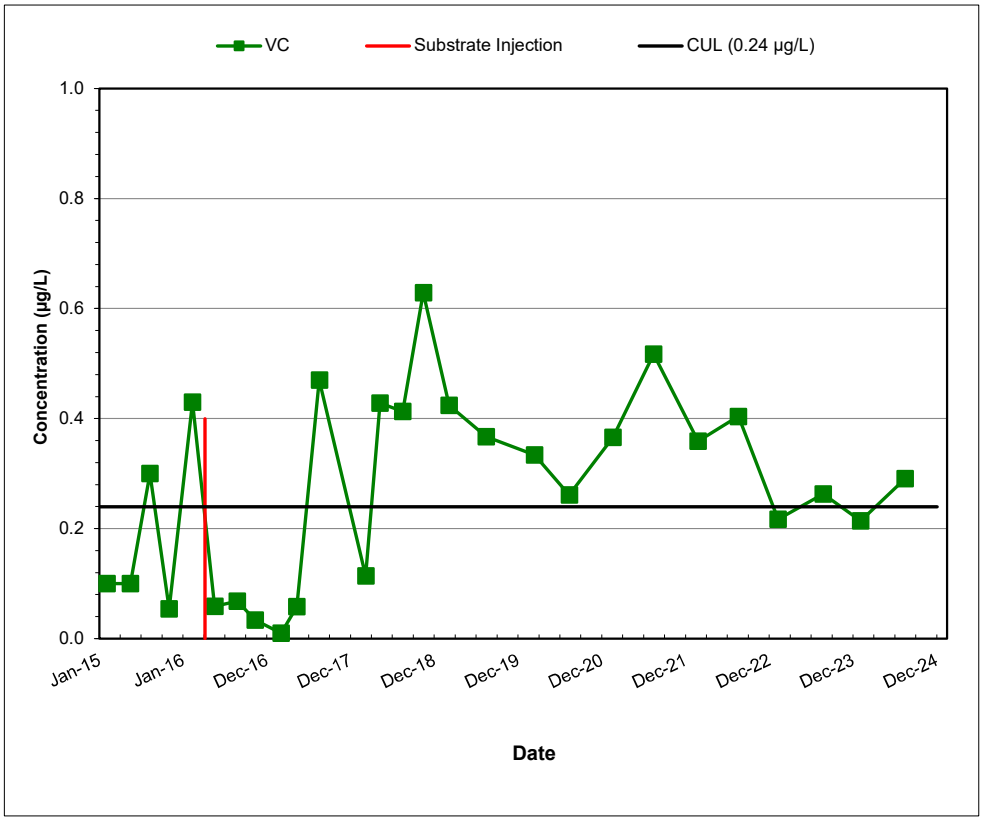
NOTES

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. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 20 FEET IN DEPTH.
   'I' DESIGNATION INDICATES WELL SCREENED GREATER THAN 20 FEET IN DEPTH.
5. THE GROUNDWATER FLOW DIRECTION SHOWN IS BASED ON HISTORICAL GROUNDWATER DATA.

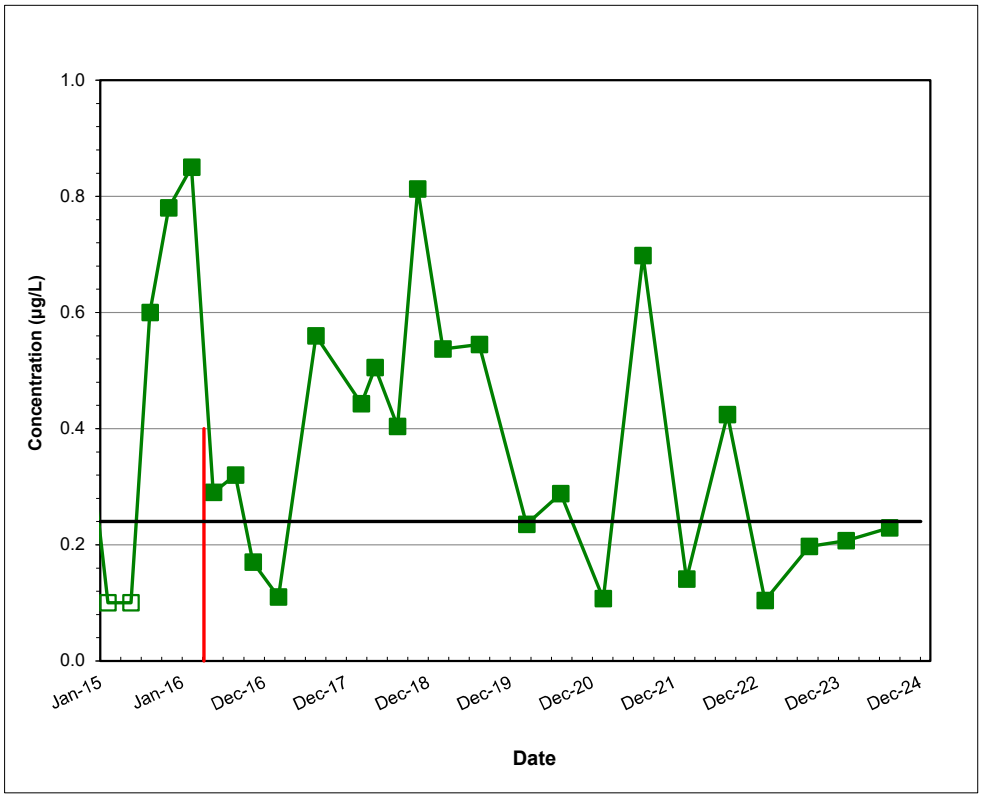
AOC-003
MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS
AUGUST 13, 2024
Boeing Renton Facility
Renton, Washington

By: SD	Date: 10/09/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 25

Plot Date: 10/09/24 - 9:07am, Plotted by: USSD7150I4
Drawing Path: X:\US\USPDX800-PORP\ProjectF$\AMEC US OFFICES\KIRKLAND\PS20203450 - Boeing Renton\dwg_GWMR_Second_Half_2024\



SOURCE AREA WELL GW249S



DOWNGRADIENT PLUME AREA WELL GW188S

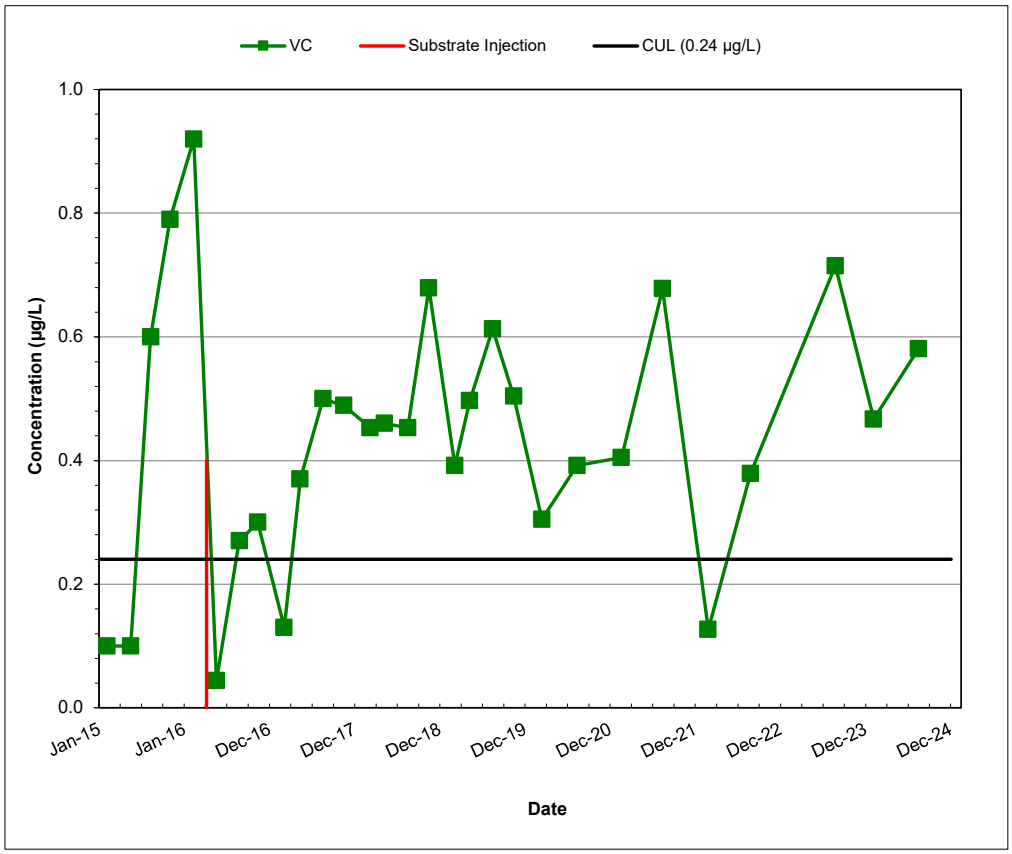
Note: Non-detected values shown at one-half the reporting limit and with an open symbol

AOC-003 TREND PLOTS FOR SOURCE AREA WELL GW249S AND DOWNGRADIENT PLUME AREA WELL GW188S
Boeing Renton Facility, Renton, Washington

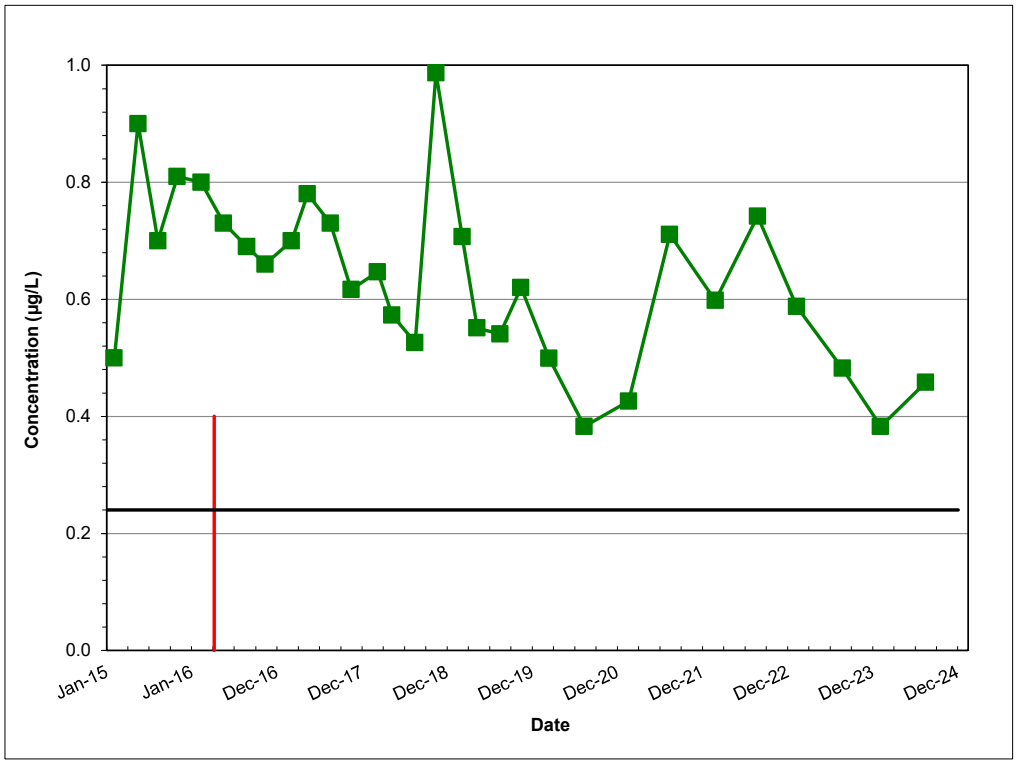
Project No. PS20203450

Figure 26

P:\8888 - Boeing Renton\9.0 Field & Lab Data Mgmt\Grapher and Excel Figure Files\excel\2022 Update\Figure 22 to 25_AOC 003-4.xlsx



CPOC WELL GW247S-R

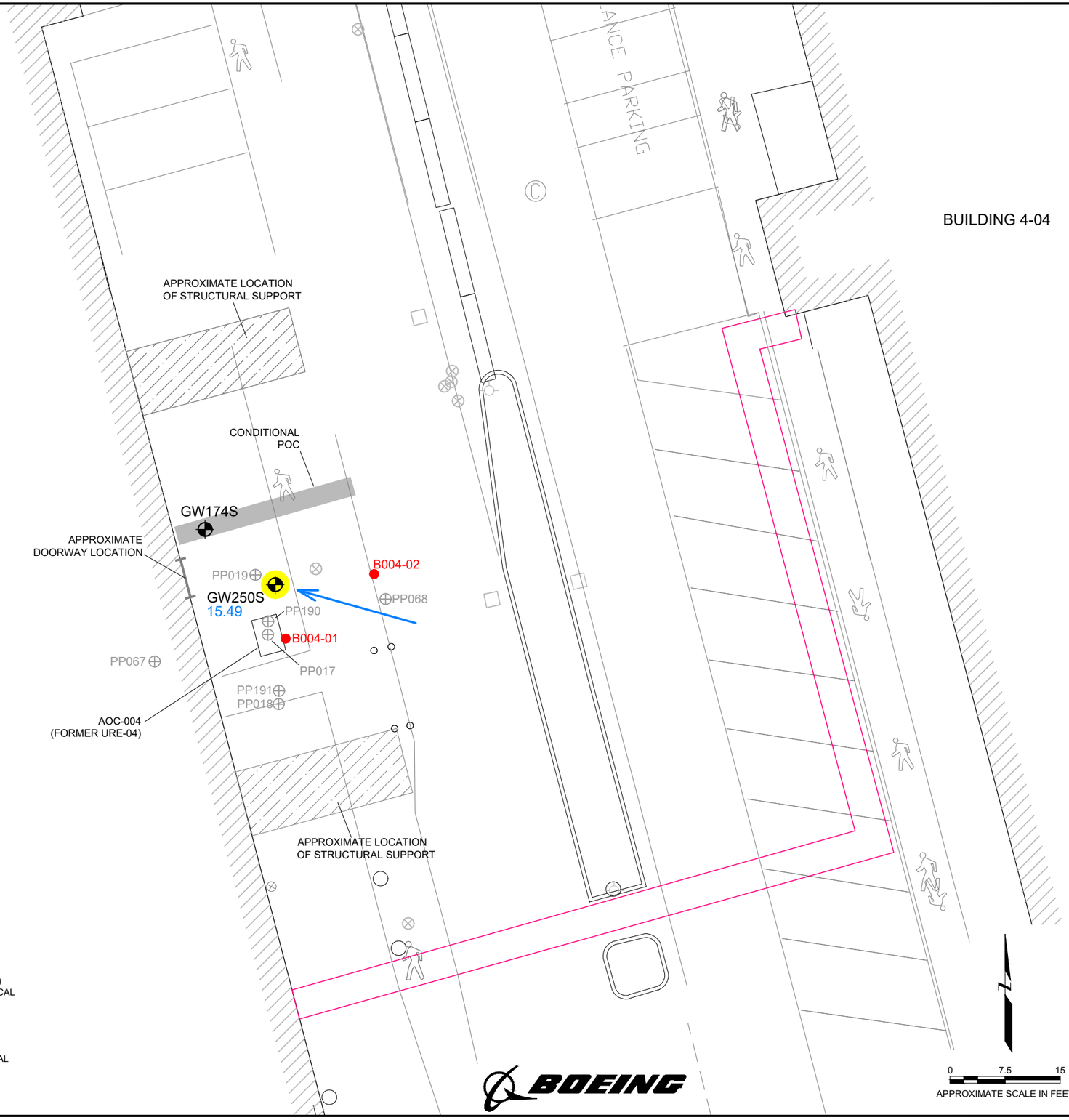


CPOC WELL GW248I

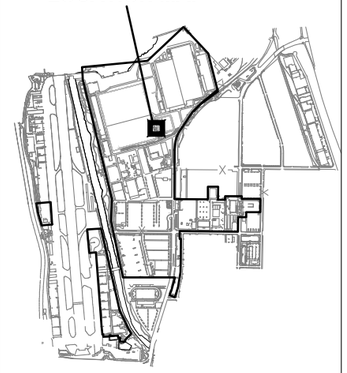
Note: Non-detected values shown at one-half the reporting limit and with an open symbol

wsp	AOC-003 TREND PLOTS FOR CPOC WELLS GW247S AND GW248I Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 27

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



AOC-004 LOCATION MAP



BOEING RENTON FACILITY MAP

LEGEND

- GW250S 15.45 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- GENERAL DIRECTION OF GROUNDWATER FLOW BASED ON HISTORICAL INFORMATION
- B004-01 — BIOREMEDIATION INJECTION WELL
- PP190 — PUSH PROBE SAMPLING LOCATION
- APPROXIMATE PROPERTY LINE
- CONDITIONAL POINT OF COMPLIANCE
- HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

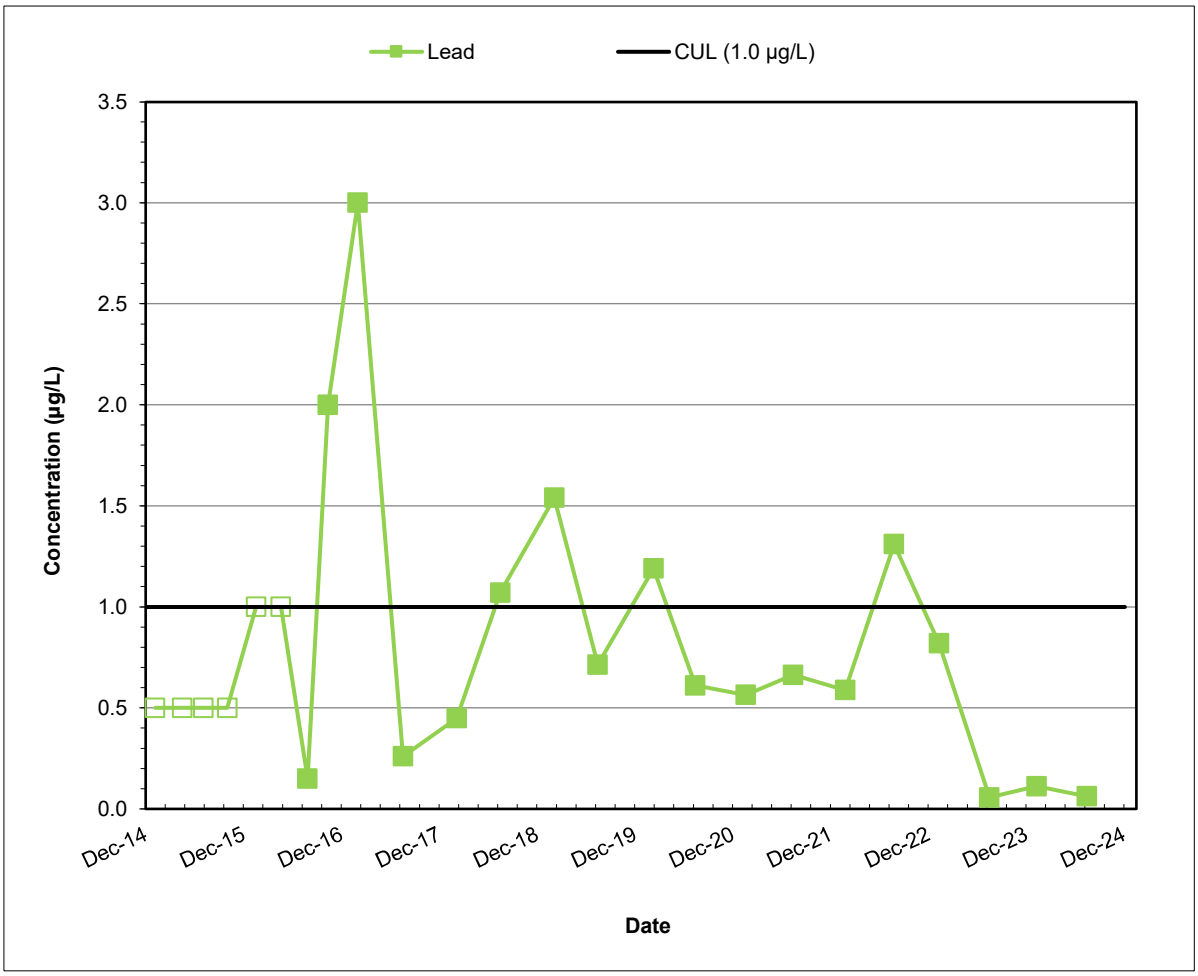
NOTES

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. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 10 FEET IN DEPTH.

AOC-004
MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS
AUGUST 12, 2024
Boeing Renton Facility
Renton, Washington

By: SD	Date: 10/09/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 28

Plot Date: 10/09/24 - 9:11am, Plotted by: USSD7150I4
Drawing Path: X:\US\USPDX800-POR\Project\$\AMEC US OFFICES\KIRKLAND\PS20203450 - Boeing Renton\dwg_GWMR_Second_Half_2024\, Drawing Name: Figure 28 - AOC-004.dwg

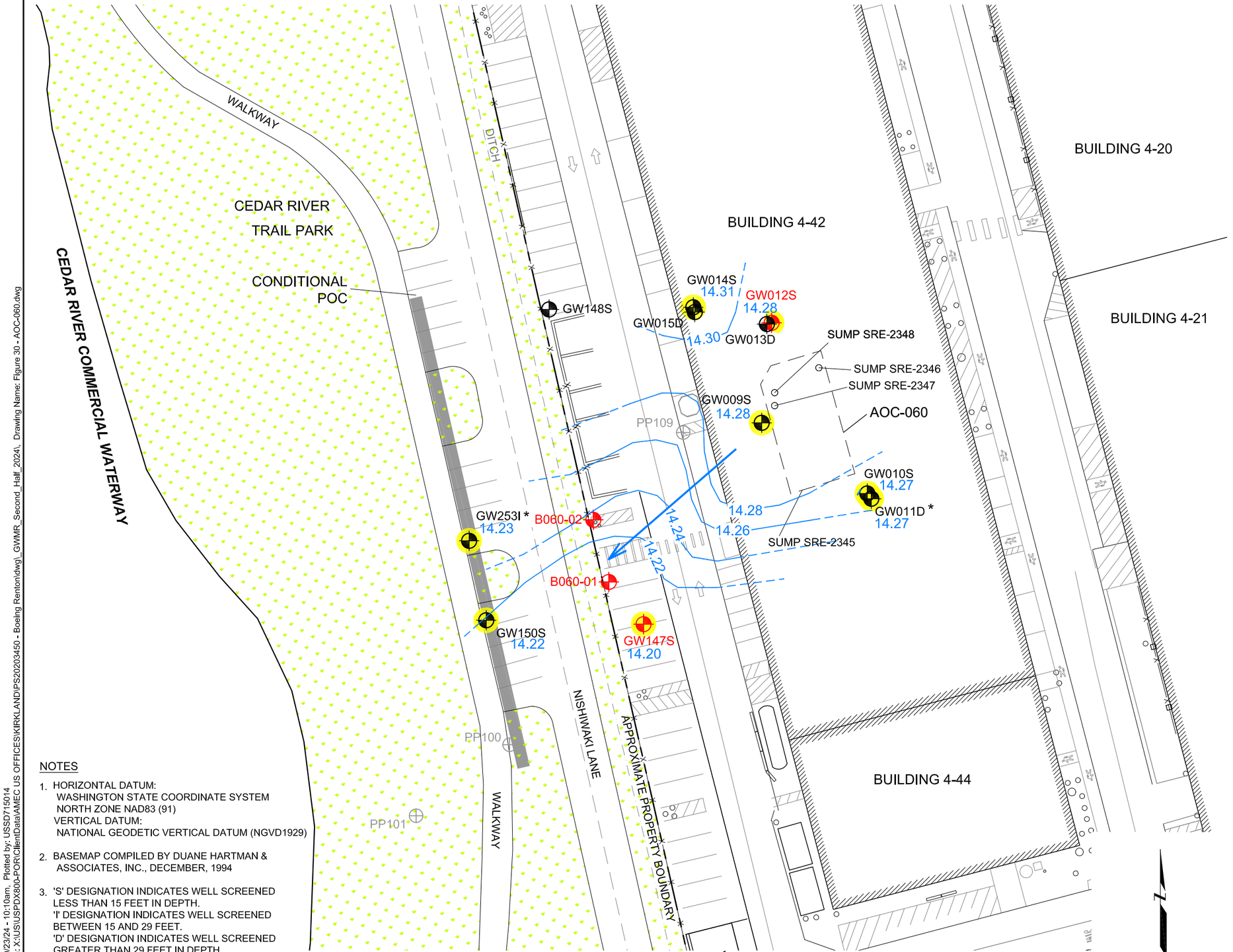


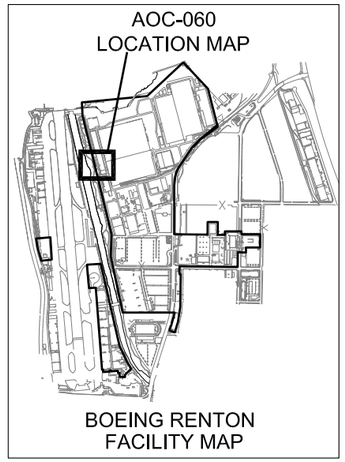
SOURCE AREA WELL GW250S

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

wsp	AOC-004 TREND PLOT FOR SOURCE AREA WELL GW250S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 29

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm





LEGEND

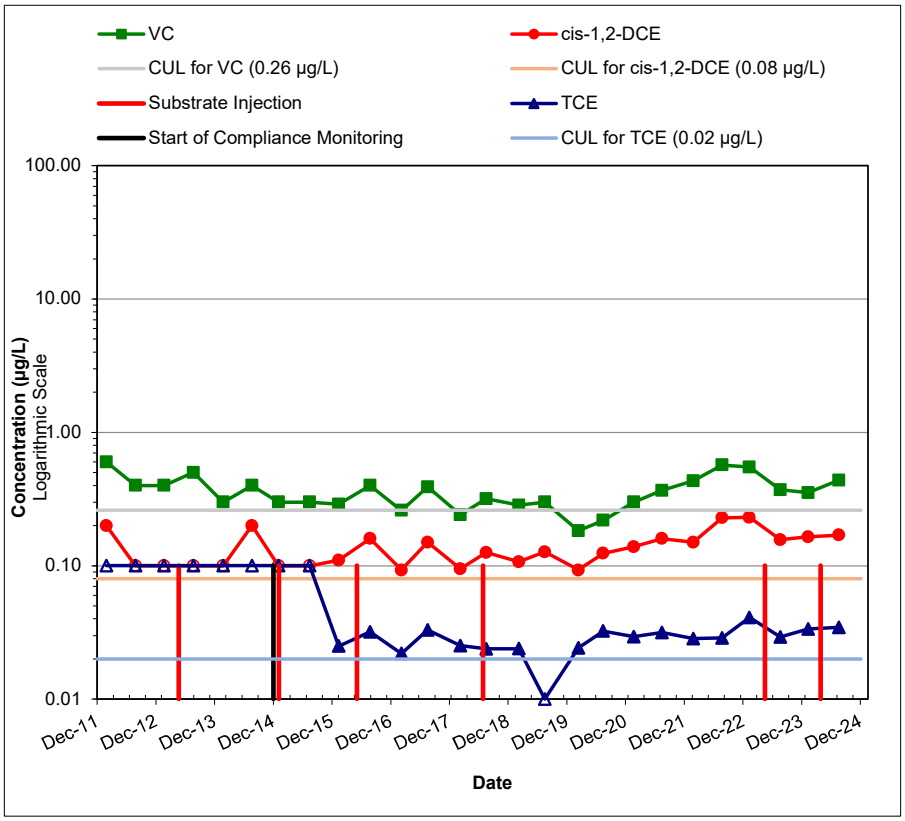
- GW150S 13.96 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- * — WELL SCREENED IN UPPER AND LOWER PORTION OF AQUIFER, SO WATER LEVEL IS NOT USED FOR CONTOURING.
- GW147S — BIOREMEDIATION INJECTION WELL AND MONITORING WELL
- 14.1 — GROUNDWATER ELEVATION CONTOUR (IN FEET) (DASHED WHERE INFERRED)
- GENERAL DIRECTION OF GROUNDWATER FLOW BASED ON HISTORICAL INFORMATION
- PP109 — PUSH PROBE SAMPLING LOCATION
- APPROXIMATE PROPERTY LINE
- FENCE LINE
- CONDITIONAL POINT OF COMPLIANCE
- HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

NOTES

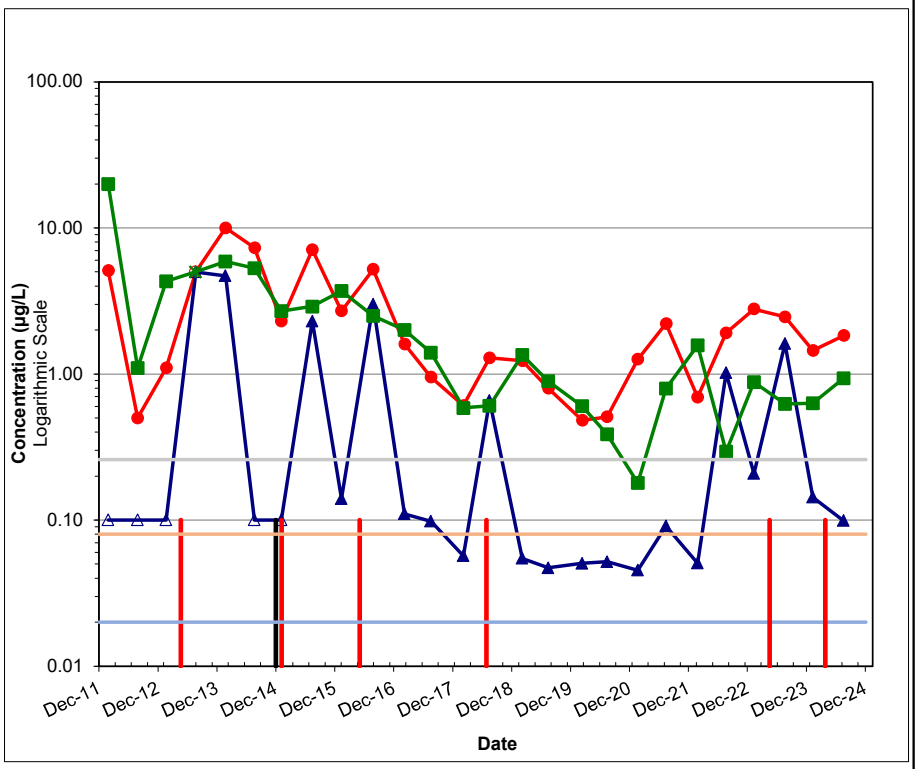
1. HORIZONTAL DATUM:
   WASHINGTON STATE COORDINATE SYSTEM
   NORTH ZONE NAD83 (91)
   VERTICAL DATUM:
   NATIONAL GEODETIC VERTICAL DATUM (NGVD1929)
2. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER, 1994
3. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 15 FEET IN DEPTH.
   'I' DESIGNATION INDICATES WELL SCREENED BETWEEN 15 AND 29 FEET.
   'D' DESIGNATION INDICATES WELL SCREENED GREATER THAN 29 FEET IN DEPTH.
4. THE GROUNDWATER FLOW DIRECTION SHOWN IS BASED ON HISTORICAL GROUNDWATER DATA.

AOC-060
MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS
AUGUST 15, 2024
Boeing Renton Facility
Renton, Washington

By: SD	Date: 10/23/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 30



SOURCE AREA WELL GW009S



DOWNGRADIENT PLUME AREA WELL GW012S

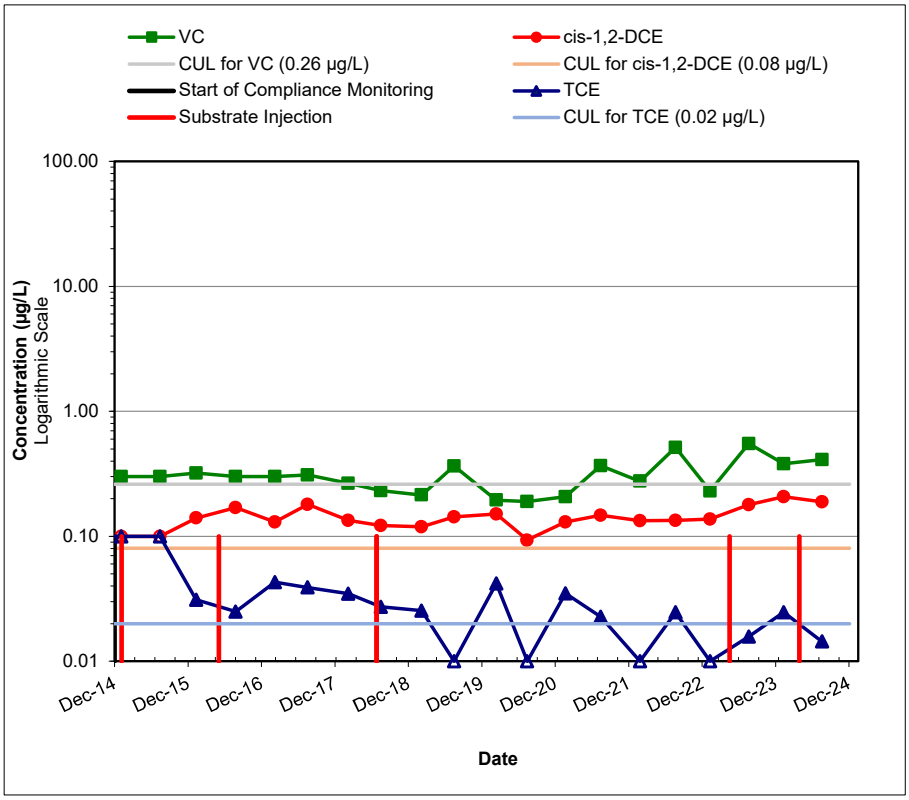
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

AOC-060 TREND PLOTS FOR
SOURCE AREA WELL GW009S AND
DOWNGRADIENT PLUME AREA WELL GW012S
Boeing Renton Facility, Renton, Washington

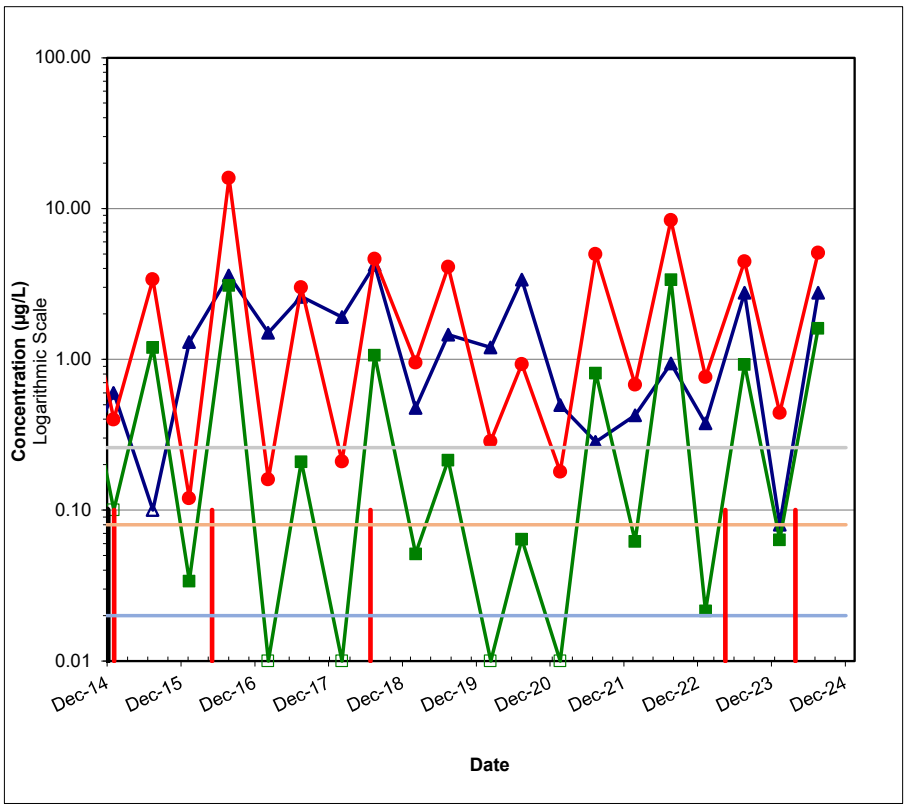
Project No.
PS2020345

Figure
31

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



DOWNGRADIENT PLUME AREA WELL GW014S



DOWNGRADIENT PLUME AREA WELL GW147S

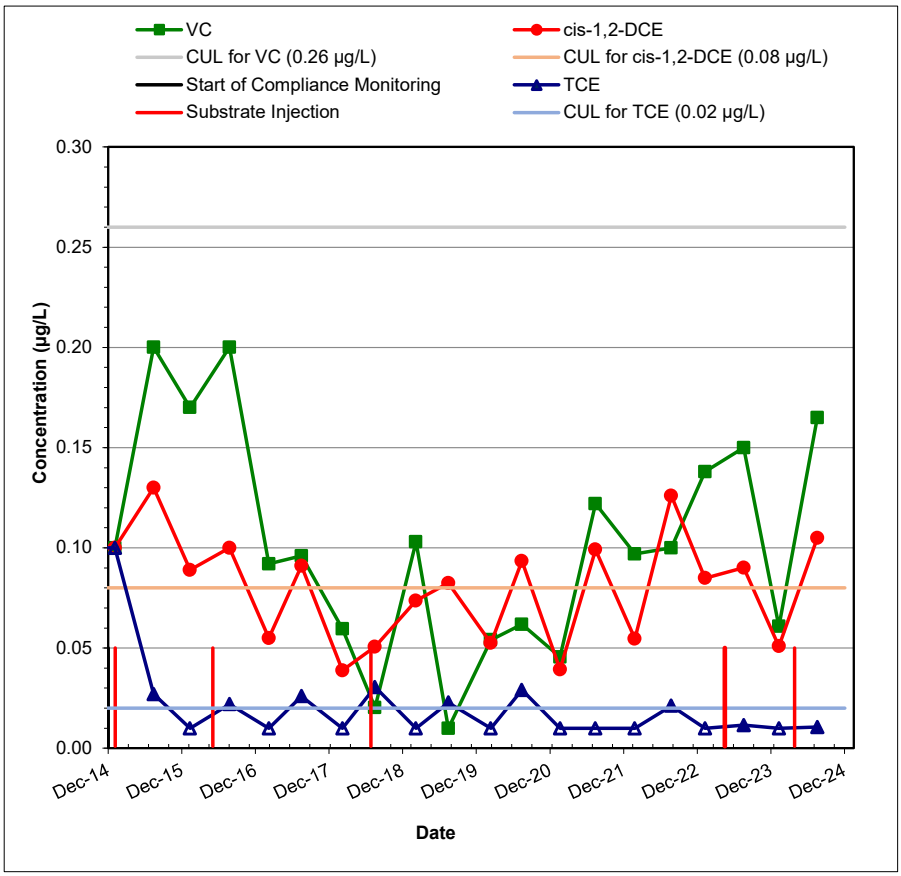
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

AOC-060 TREND PLOTS FOR DOWNGRADIENT PLUME AREA WELLS GW014S AND GW147S
Boeing Renton Facility, Renton, Washington

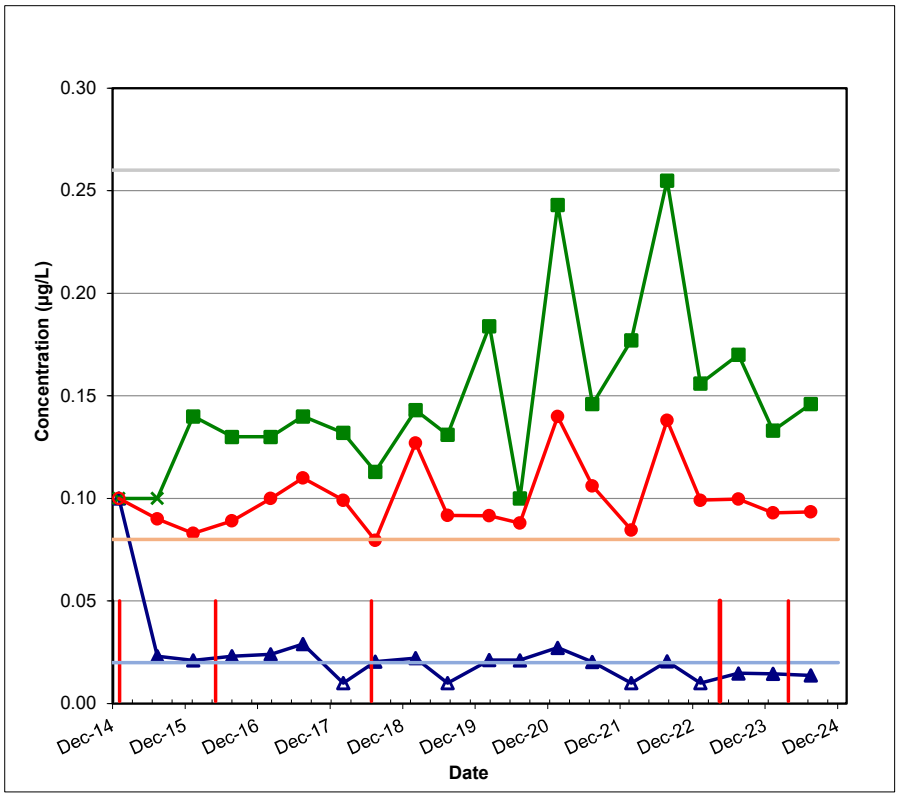
Project No. PS2020345

Figure 32

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



CPOC AREA WELL GW150S



CPOC AREA WELL GW253I

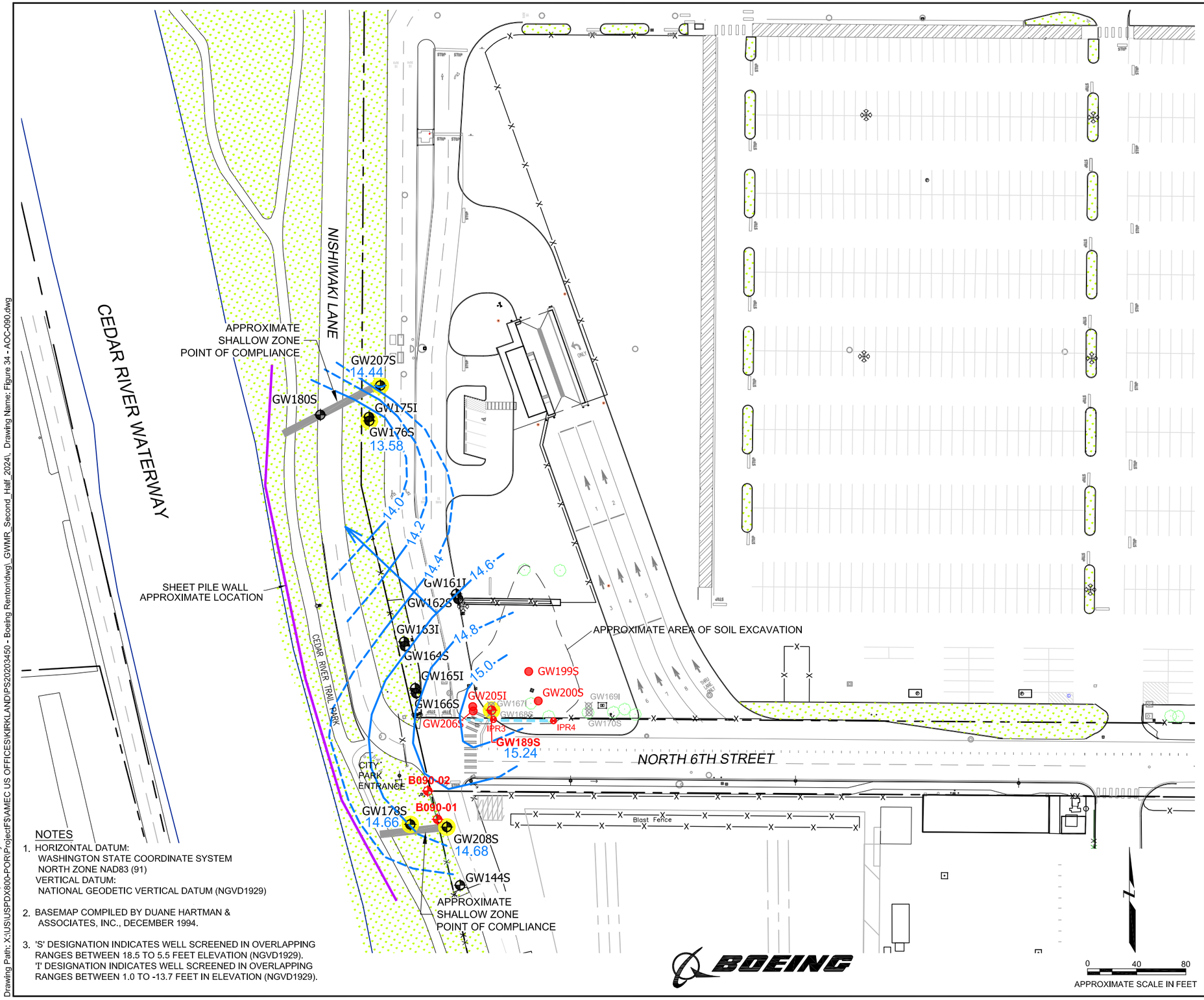
Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

AOC-060 TREND PLOTS FOR
CPOC AREA WELLS GW150S AND GW253I
Boeing Renton Facility, Renton, Washington

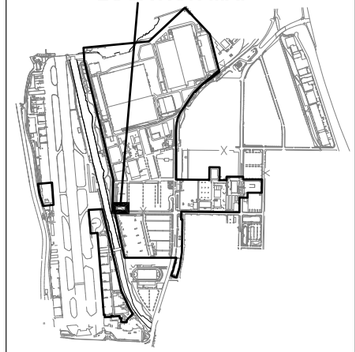
Project No.
PS2020345

Figure
33

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm



AOC-090
LOCATION MAP



BOEING RENTON
FACILITY MAP

LEGEND

- GW178S 14.44 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- 15.0 — GROUNDWATER ELEVATION CONTOUR (IN FEET) (DASHED WHERE INFERRED)
- GENERAL DIRECTION OF GROUNDWATER FLOW BASED ON HISTORICAL INFORMATION
- GW201S — EXISTING BIOREMEDIATION SUBSTRATE INJECTION WELL
- GW189S 15.62 — EXISTING BIOREMEDIATION SUBSTRATE INJECTION WELL AND MONITORING WELL GROUNDWATER ELEVATION (NGVD-FEET)
- IPR4 — EXISTING INJECTION PIPE RISER
- GW170S — DECOMMISSIONED MONITORING WELL
- APPROXIMATE PROPERTY LINE
- FENCE
- APPROXIMATE LOCATION OF 4-INCH DIAMETER PERFORATED PIPE
- CONDITIONAL POINT OF COMPLIANCE
- APPROXIMATE LOCATION OF SHEET PILE WALL
- HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

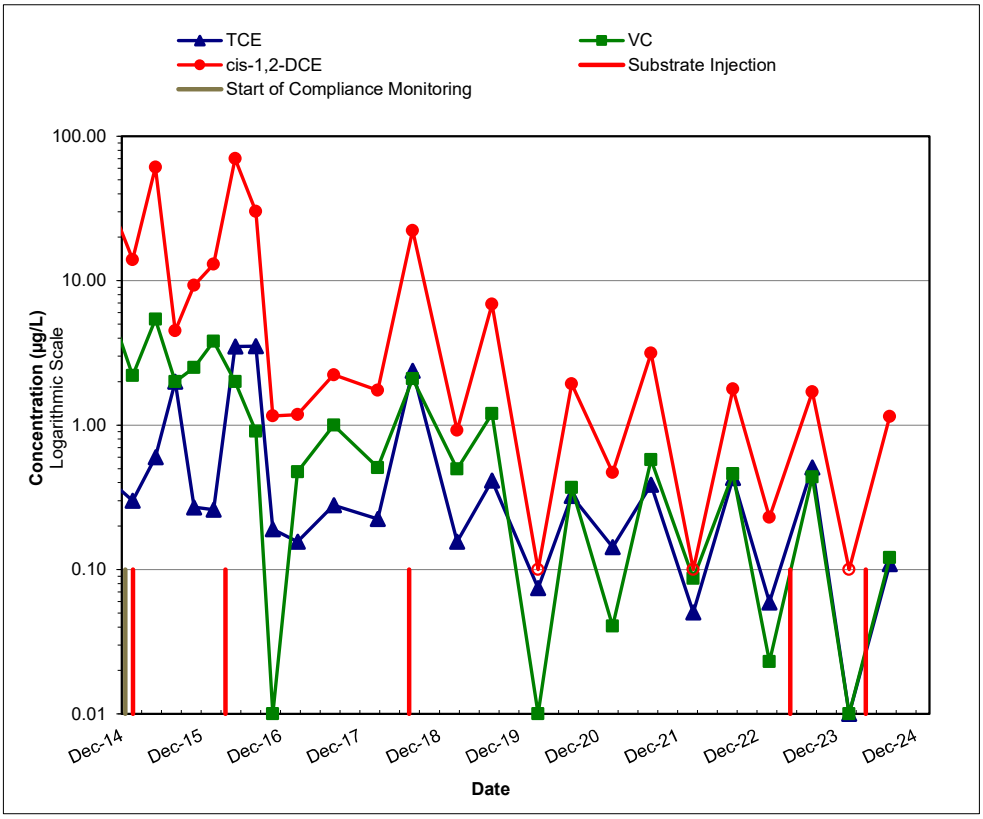
NOTES

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. 'S' DESIGNATION INDICATES WELL SCREENED IN OVERLAPPING RANGES BETWEEN 18.5 TO 5.5 FEET ELEVATION (NGVD1929).
   'I' DESIGNATION INDICATES WELL SCREENED IN OVERLAPPING RANGES BETWEEN 1.0 TO -13.7 FEET IN ELEVATION (NGVD1929).

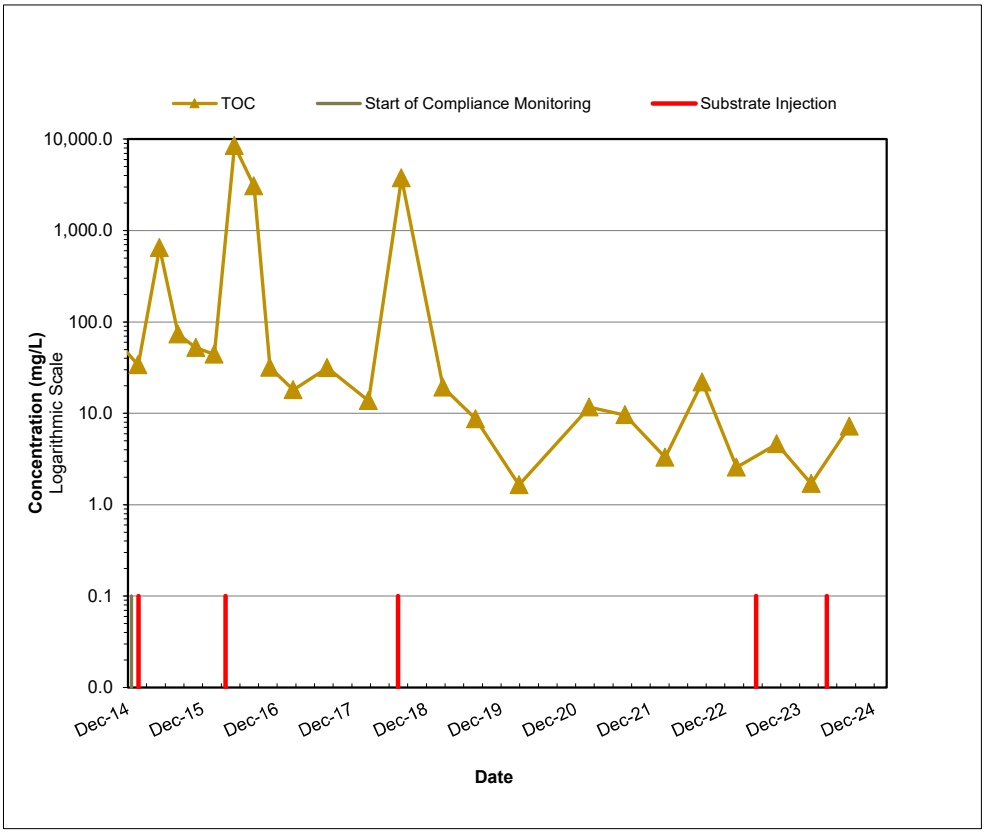
AOC-090
MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS
AUGUST 13 & 14, 2024
Boeing Renton Facility
Renton, Washington

By: SD	Date: 10/09/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.	Figure 34	

Plot Date: 10/09/24 - 9:17am Plotted by: USSD715014
Drawing Path: X:\US\USPDX800-POR\Project\$\AMEC US OFFICES\KIRKLAND\PS202034450 - Boeing Renton\dwg_GWMR_Second_Half_2024_Drawing Name: Figure 34 - AOC-090.dwg



SOURCE AREA WELL GW189S

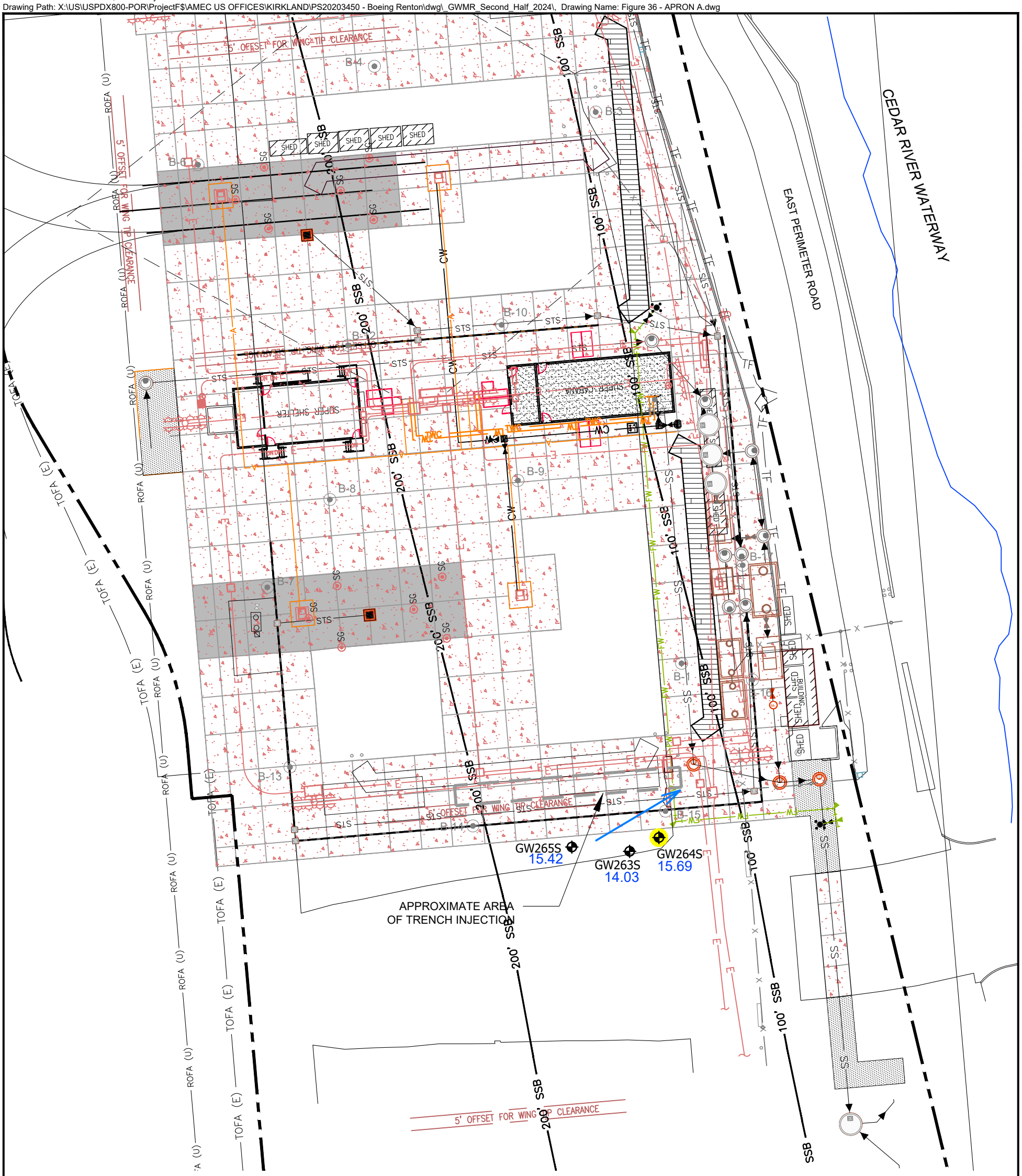


Note: Non-detected values shown at one-half the reporting limit and with an open symbol.

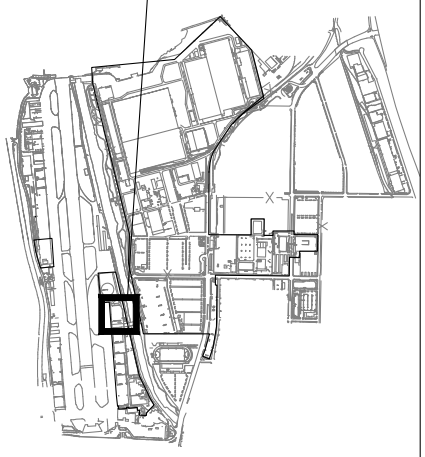
wsp	AOC-090 TREND PLOTS FOR SOURCE AREA WELL GW189S Boeing Renton Facility, Renton, Washington	Project No. PS20203450 Figure 35

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37)_241022.xlsm

Plot Date: 10/09/24 - 9:23am, Plotted by: USSD715014
Drawing Path: X:\US\USPDX800-POR\ProjectF$\AMEC US OFFICES\KIRKLAND\PS20203450 - Boeing Renton\dwg_GWMR_Second_Half_2024\, Drawing Name: Figure 36 - APRON A.dwg



APRON A
LOCATION MAP



BOEING RENTON
FACILITY MAP

LEGEND

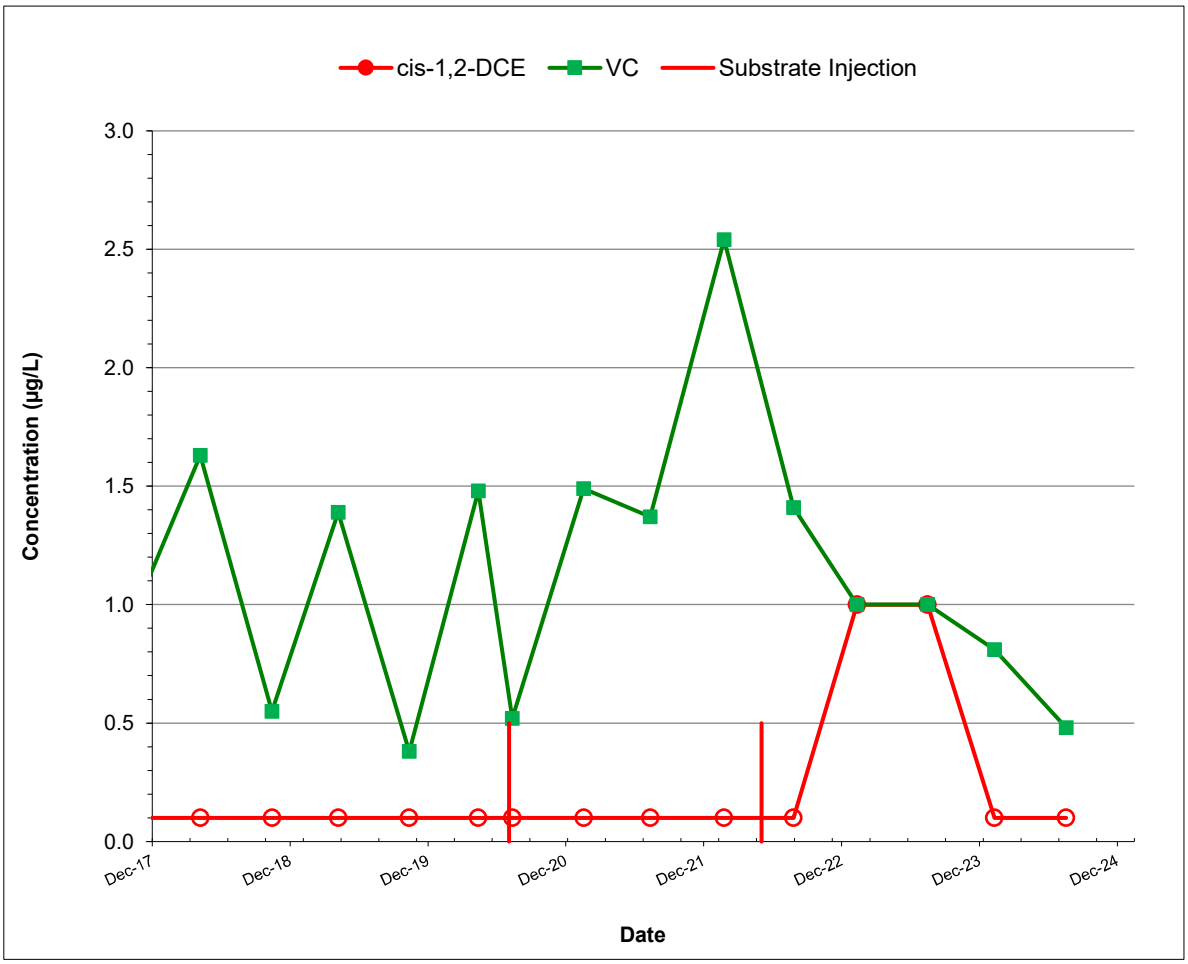
- GW264S 14.64 — MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (NGVD-FEET)
- GENERAL DIRECTION OF GROUNDWATER FLOW BASED ON HISTORICAL INFORMATION
- B-1 — SOIL SAMPLE LOCATION
- APPROXIMATE PROPERTY LINE
- x — FENCE

HIGHLIGHTED WELLS INCLUDED IN MONITORING NETWORK

NOTE:
1. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 10 FEET IN DEPTH.

APRON A AREA
MONITORING WELL LOCATIONS AND DEPTH TO GROUNDWATER
AUGUST 15, 2024
Boeing Renton Facility
Renton, Washington

By: SD	Date: 10/09/24	Project No. PS24206850
WSP USA Environment & Infrastructure Inc.		Figure 36



SOURCE AREA WELL GW264S

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

wsp	APRON A TREND PLOT FOR WELL GW264S Boeing Renton Facility Renton, Washington	Project No. PS20203450 Figure 37

X:\US\USXHF100-SEA\SEA2-FS1-Archive\8888.000 Boeing Renton\267\Figures\Boeing_Renton_Charts (3-37) _241022.xlsm

TABLES

Table 1: SWMU-168 Groundwater Elevation Data

August 13, 2024

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]
GW230I	4 to 14	24.86	7.89	16.97

Notes:

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

Abbreviations:

bgs = below ground surface

SWMU = solid waste management unit

TOC = top of casing

Table 2: SWMU-168 Primary Geochemical Indicators[1]
August 13, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID [2]
	CPOC Area
	GW230I
Temperature (degrees C)	20.2
Specific Conductivity (µS/cm)	414
Dissolved Oxygen (mg/L)	0.07
pH (standard units)	6.28
Oxidation/Reduction Potential (mV)	-46.8

Notes:
1. Primary geochemical indicators are measured in the field.
2. 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
SWMU = solid waste management unit

Table 3: SWMU-168 Concentrations of Constituents of Concern [1, 2]
August 13, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Level [1]	Well ID [2] CPOC Area GW230I
Volatile Organic Compounds (µg/L)		
Vinyl Chloride	0.11	0.0784

Notes:
1. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.
2. I = intermediate well.

Abbreviations:
µg/L = micrograms per liter
CPOC = conditional point of compliance
SWMU = solid waste management unit

Table 4: SWMU-172 and SWMU-174 Group Groundwater Elevation Data

August 13 & 15, 2024

Boeing Renton Facility, Renton, Washington

Well ID[1]	Screen Interval Depth (feet bgs)	TOC Elevation (feet)[3]	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)[3]
GW152S	5 to 20[2]	26.98	9.88	17.10
GW153S	5 to 20[2]	27.47	10.64	16.83
GW172S	8 to 18[2]	26.44	9.88	16.56
GW173S	8 to 18[2]	26.51	7.35	19.16
GW226S	5 to 20[2]	26.86	9.90	16.96
GW232S	4 to 14	24.45	7.50	16.95
GW234S	3 to 13	24.95	8.66	16.29
GW235I	15 to 25	24.90	7.85	17.05
GW236S	5 to 15	24.36	6.11	18.25

Notes:

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

Abbreviations:

bgs = below ground surface

SWMU = solid waste management unit

TOC = top of casing

Table 5: SWMU-172 and SWMU-174 Group Primary Geochemical Indicators[1]
August 13 & 15, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]									
	Source Area		Downgradient Plume Area				CPOC Area			
	GW152S	GW153S	GW172S	GW172S (field dup.)	GW173S	GW226S	GW232S	GW234S	GW235I	GW236S
Temperature (degrees C)	20.0	17.2	18.0	NA	18.2	18.9	19.7	17.8	15.8	17.8
Specific Conductivity (µS/cm)	1862	294	363	NA	432	351	510	241	187	336
Dissolved Oxygen (mg/L)	0.01	0.01	0.01	NA	0.09	0.01	0.01	0.07	0.05	0.16
pH (standard units)	5.04	6.42	6.03	NA	6.31	6.43	6.27	6.32	6.64	6.57
Oxidation/Reduction Potential (mV)	83.3	-27.2	-8.8	NA	-10.4	-37.7	-36.2	-4.2	-7.9	-44.0
Total Organic Carbon (mg/L)[3]	1757	26.01	106.20	97.12	65.04	30.44	34.48	18.23	9.87	20.10

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.
3. Data qualifiers are as follows:
   J = the value is estimated.

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
SWMU = solid waste management unit

Table 6: SWMU-172 and SWMU-174 Group Concentrations of Constituents of Concern [1, 2]
August 13 & 15, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Level [4]	Well ID [3]									
		Source Area		Downgradient Plume Area				CPOC Area			
		GW152S	GW153S	GW172S	GW172S duplicate	GW173S	GW226S	GW232S	GW234S	GW235I	GW236S
Volatile Organic Compounds (µg/L)											
cis -1,2-Dichloroethene	0.03	**1.41**	**0.0574**	**0.585**	**0.442**	**0.226**	0.0232	**0.238**	**0.114**	**0.240**	**0.0523**
Tetrachloroethene	0.02	**0.848**	0.0200 U	**0.0417**	**0.0340**	**0.0257**	**0.0248**	0.0200 U	0.0200 U	0.0200 U	0.0200 U
Trichloroethene	0.02	**0.303**	0.0200 U	**0.185**	**0.139**	**0.0706**	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
Vinyl Chloride	0.11	**0.152**	**0.153**	**0.180**	**0.136**	**0.214**	0.0923	**0.256**	0.0981	0.0258	0.0200 U
Total Metals (µg/L)											
Arsenic	8.0	**62.4**	4.11	6.99	7.01	5.81	6.74	6.92	1.05	0.200 U	4.17
Copper	3.5	**131**	1.11	0.500 U	0.909	1.00 U	2.17	2.04	0.639	0.500 U	1.63
Lead	1.0	**74.4**	0.271	0.172 J	0.423 J	0.302	0.324	0.680	0.256	0.100 U	**1.29**

Notes:

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = the value is estimated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

Abbreviations:

µg/L = micrograms per liter
CPOC = conditional point of compliance
SWMU = solid waste management unit

Table 7: Building 4-78/79 SWMU/AOC Group Groundwater Elevation Data

August 14, 2024

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-R	5 to 25	19.59	5.40	14.19
GW033S	5 to 25	19.49	5.32	14.17
GW034S	5 to 25	19.65	5.43	14.22
GW143S	10 to 15	19.81	5.50	14.31
GW237S	5 to 15	18.85	4.57	14.28
GW240D	22 to 27	19.81	6.49	13.32
GW244S-R	5 to 15	19.42	5.21	14.21

Notes:

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

Abbreviations:

AOC = area of concern
bgs = below ground surface
NA = not available
SWMU = solid waste management unit
TOC = top of casing

Table 8: Building 4-78/79 SWMU/AOC Group Primary Geochemical Indicators[1]
August 14, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]							
	Source Area					CPOC Area		
	GW031S-R	GW033S	GW033S (field dup.)	GW034S	GW244S-R	GW143S	GW237S	GW240D
Temperature (degrees C)	19.2	19.2	NA	19.6	19.0	18.7	20.8	17.3
Specific Conductivity (µS/cm)	480	602	NA	428	673	413	351	282
Dissolved Oxygen (mg/L)	0.01	0.01	NA	0.01	0.01	0.14	0.07	0.04
pH (standard units)	6.09	6.16	NA	6.32	6.30	6.33	6.39	6.53
Oxidation/Reduction Potential (mV)	-16.3	-27.8	NA	-36.1	-38.9	-27.9	-39.1	-56.6
Total Organic Carbon (mg/L)[3]	39.73	42.18	40.63	23.83	32.26	24.81	16.16	19.59

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; D = deep well.
3. Data qualifiers are as follows:
   J = the value is estimated.

Abbreviations
µS/cm = microsiemens per centimeter
AOC = area of concern
CPOC = conditional point of compliance
degrees C = degrees Celsius
field dup. = field duplicate
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed
SWMU = solid waste management unit

Table 9: Building 4-78/79 SWMU/AOC Group Concentrations of Constituents of Concern [1, 2]
August 14, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Level [4]	Well ID [3]							
		Source Area					CPOC Area		
		GW031S-R	GW033S	GW033S (field dup.)	GW034S	GW244S-R	GW143S	GW237S	GW240D
Volatile Organic Compounds (µg/L)									
Benzene	0.80	0.200 U	**7.27**	**7.32**	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
cis -1,2-Dichloroethene	0.70	0.200 U	0.610	**0.790**	0.200 U	0.520	**0.980**	0.200 U	0.200 U
Trichloroethene	0.23	0.200 U	0.200 U	0.200 U	0.200 U	**0.330**	0.200 U	0.200 U	0.200 U
Vinyl Chloride	0.20	**0.290**	0.200 U	0.200 U	0.200 U	**0.330**	0.200 U	**0.210**	0.200 U
Total Petroleum Hydrocarbons (µg/L)									
TPH-G (C7-C12)	800	100.0 U	202	205	100.0 U	100.0 U	100.0 U	100.0 U	100.0 U

Notes:
1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = The value is estimated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; D = deep well.
4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

Abbreviations:
µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
field dup. = field duplicate
SWMU = solid waste management unit
TPH-G = total petroleum hydrocarbons as gasoline

Table 10: Former Fuel Farm Groundwater Elevation Data

August 15, 2024

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]
GW211S	4.8 to 14.7	27.77	10.97	16.80
GW221S	5 to 15	27.93	11.04	16.89
GW224S	5 to 15	27.98	11.41	16.57

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 11: Former Fuel Farm Primary Geochemical Indicators[1]
August 15, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]		
	CPOC Area		
	GW211S	GW221S	GW224S
Temperature (degrees C)	17.6	18.5	18.9
Specific Conductivity (µS/cm)	237	277	184
Dissolved Oxygen (mg/L)	0.07	0.01	0.01
pH (standard units)	6.24	6.34	6.15
Oxidation/Reduction Potential (mV)	10.2	23.1	49.7

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
mg/L = milligrams per liter
mV = millivolts

Table 12: Former Fuel Farm Concentrations of Constituents of Concern [1, 2]
August 15, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Level [4]	Well ID [3]		
		CPOC Area		
		GW211S	GW221S	GW224S
Total Petroleum Hydrocarbons (mg/L)				
TPH-D (C12-C24)	0.5	**0.548**	**0.974**	**0.686 J**
TPH-O (C24-C38)	NE	0.200 U	0.200 U	0.200 U
Jet A (C10-C18)	0.5	0.408	**0.637**	**0.943**

Notes

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = The value is estimated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well.
4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

Abbreviations

CPOC = conditional point of compliance
field dup. = field duplicate
mg/L = milligrams per liter
NE = not established
TPH-D = total petroleum hydrocarbons as diesel
TPH-O = total petroleum hydrocarbons as motor oil

Table 13: AOC-001 and -002 Groundwater Elevation Data

August 12, 2024

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]
GW185S-R	4.5 to 14.5	17.83	3.62	14.21
GW190S-R	3 to 13	17.97	3.79	14.18
GW191D-R	26 to 36	17.94	3.39	14.55
GW192S-R	4.5 to 9.5	17.67	3.43	14.24
GW193S-R	3 to 12.8	18.39	4.39	14.00
GW195S-R	7 to 12	18.45	4.38	14.07
GW196D-R	26 to 36	18.43	4.23	14.20
GW197S-R	7.5 to 12.5	18.34	4.27	14.07
GW213S-R	3 to 13	18.14	3.80	14.34
GW214S-R	3.5 to 13.5	18.27	3.69	14.58
GW215S-R	3 to 13	18.22	3.77	14.45
GW245S-R	3 to 13	18.32	4.25	14.07
GW246S-R	4 to 14	17.85	3.68	14.17

Notes:

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

Abbreviations:

AOC = area of concern
bgs = below ground surface
NA = not applicable
NM = not measured
TOC = top of casing

Table 14: AOC-001 and -002 Primary Geochemical Indicators[1]
August 12, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]												
	AOC-001 / AOC-002 Cross-Gradient Wells			AOC-001 / AOC-002 Source Area Wells	AOC-001 / AOC-002 Downgradient Plume Wells				AOC-001 / AOC-002 CPOC Wells				
	GW213S-R	GW214S-R	GW215S-R	GW193S-R	GW190S-R	GW191D-R	GW192S-R	GW246S-R	GW185S-R	GW195S-R	GW196D-R	GW197S-R	GW245S-R
Temperature (degrees C)	20.9	20.5	20.8	20.6	22.7	18.8	23.7	23.0	21.0	21.3	21.0	21.3	22.0
Specific Conductivity (µS/cm)	5562	3662	4492	2275	722	406	285	731.0	760	486	489	292	521.0
Dissolved Oxygen (mg/L)	0.06	0.75	0.06	0.01	0.01	0.01	0.01	0.79	0.1	0.01	0.01	0.01	0.01
pH (standard units)	4.62	4.03	4.06	5.09	6.27	6.54	6.19	6.23	6.36	6.36	6.30	8.89	7.52
Oxidation/Reduction Potential (mV)	-10.1	-183.6	-175.4	-27.3	-104.3	-94.4	17.1	-89.5	-99.2	-83.6	-63.5	-249.7	-269.8
Total Organic Carbon (mg/L)[3]	12580	16360	25150	2026	31.27	16.11	9.45	35.07	37.84	26.92	23.29	11.39	20.16

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; D = deep well.

Abbreviations
µS/cm = microsiemens per centimeter
AOC = area of concern
CPOC = conditional point of compliance
degrees C = degrees Celsius
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed

Table 15: AOC -001 and -002 Concentrations of Constituents of Concern[1]
August 12, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Level [4]	Well ID [2]												
		AOC-001 / AOC-002 Source Area	AOC-001 / AOC-002 Cross-Gradient Wells			AOC-001 / AOC-002 Downgradient Plume Wells				AOC-001 / AOC-002 CPOC Wells				
		GW193S-R	GW213S-R	GW214S-R	GW215S-R	GW190S-R	GW191D-R	GW192S-R	GW246S-R	GW185S-R	GW195S-R	GW196D-R	GW197S-R	GW245S-R
Volatile Organic Compounds (µg/L)														
Benzene	0.80	0.200 U	1.00 U	1.00 U	1.00 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.760	0.390
1,1-Dichloroethene	0.057	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0468	0.0200 U
cis-1,2-Dichloroethene	0.02	**2.19**	**0.134**	0.0200 U	**0.156**	**0.194**	0.0200 U	**1.78**	**0.176**	**0.240**	**0.102**	**0.0250**	**18.9**	**0.204**
Trichloroethene	0.02	**1.51**	**0.0266**	0.0200 U	0.0200 U	0.0200 U	0.0200 U	**0.0538**	0.0200 U	0.0200 U	0.0200 U	0.0200 U	**0.268**	**0.0252**
Vinyl Chloride	0.05	**1.21**	0.0482	0.0200 U	0.0200 U	**0.0818**	**0.0934**	**1.07**	**0.181**	**0.124**	**0.117**	0.0213	**12.6**	**0.141**

Notes:

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = The value is estimated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

Abbreviations:

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
NA = not analyzed
NE = not established

Table 16: AOC-003 Groundwater Elevation Data

August 13, 2024

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	3.5 to 13.5	18.78	4.20	14.58
GW247S-R	4 to 14	18.93	4.58	14.35
GW248I	10 to 20	18.78	4.40	14.38
GW249S	4 to 14	18.85	3.96	14.89

Notes:

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

Abbreviations:

AOC = area of concern

bgs = below ground surface

NA = not applicable

NM = not measured

TOC = top of casing

Table 17: AOC-003 Primary Geochemical Indicators[1]
August 13, 2024
Boeing Renton Facility, Renton, Washington

Parameter	AOC-003 Source Area	AOC-003 Downgradient Plume Area	AOC-003 CPOC Area	
	GW249S	GW188S	GW247S-R	GW248I
Temperature (degrees C)	19.2	17.8	19.1	17.5
Specific Conductivity (µS/cm)	383	441	554	573
Dissolved Oxygen (mg/L)	0.07	0.05	0.01	0.01
pH (standard units)	6.21	6.28	6.29	6.25
Oxidation/Reduction Potential (mV)	-48.8	-57.1	-60.9	-48.8
Total Organic Carbon (mg/L)[3]	13.19	12.77	12.63	12.00

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
AOC = area of concern
CPOC = conditional point of compliance
degrees C = degrees Celsius
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed

Table 18: AOC -003 Concentrations of Constituents of Concern[1]
August 13, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Level [4, 5]	Well ID[3]			
		AOC-003 Source Area	AOC-003 Downgradient Plume Area	AOC-003 CPOC Area	
		GW249S	GW188S	GW247S-R	GW248I
Volatile Organic Compounds (µg/L)					
cis-1,2-Dichloroethene	0.78	0.0566	0.0293	0.0200 U	0.0200 U
Trichloroethene	0.16	0.0200 U	0.0200 U	0.0200 U	0.0200 U
Tetrachloroethene	0.02	0.0200 U	0.0200 U	0.0200 U	0.0200 U
Vinyl Chloride	0.24	**0.291**	0.229	**0.581**	**0.458**

Notes:

1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   J = The value is estimated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.
5. Cleanup levels for cis, 1,2-dichloroethene, trichloroethene, and tetrachloroethene are established for wells in AOC-003 only.

Abbreviations:

µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
NA = not analyzed
NE = not established

Table 19: AOC-004 Groundwater Elevation Data

August 12, 2024

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]
GW250S	4 to 14	19.31	3.82	15.49

Notes:

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

Abbreviations:

AOC = area of concern

bgs = below ground surface

TOC = top of casing

Table 20: AOC-004 Primary Geochemical Indicators[1]
August 12, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID [2]	
	Source Area	
	GW250S	
Temperature (degrees C)	18.2	
Specific Conductivity (µS/cm)	175	
Dissolved Oxygen (mg/L)	0.01	
pH (standard units)	6.92	
Oxidation/Reduction Potential (mV)	-90.1	

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

Abbreviations:
µS/cm = microsiemens per centimeter
AOC = area of concern
degrees C = degrees Celsius
mg/L = milligrams per liter
mV = millivolts

Table 21: AOC-004 Concentrations of Constituents of Concern
August 12, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Level [3]	Well ID [2] Source Area GW250S
Metals (µg/L)		
Lead	1	0.062 J

Notes:

1. Data qualifiers are as follows:
   J = The value is estimated.
2. S = shallow well.
3. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

Abbreviations:

AOC = area of concern
µg/L = micrograms per liter

Table 22: AOC-060 Groundwater Elevation Data

August 15, 2024

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]
GW009S	4.5 to 14.5	19.36	5.08	14.28
GW010S	4.5 to 14.5	19.47	5.20	14.27
GW011D	29 to 39	19.49	5.22	14.27
GW012S	4.5 to 14.5	19.11	4.83	14.28
GW014S	4.5 to 14.5	19.24	4.93	14.31
GW147S	5 to 15	18.73	4.53	14.20
GW150S	5 to 15	19.10	4.88	14.22
GW253I	10 to 20	19.02	4.79	14.23

Notes:

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

Abbreviations:

AOC = area of concern

bgs = below ground surface

TOC = top of casing

Table 23: AOC-060 Primary Geochemical Indicators[1]
August 15, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID [2]						
	Source Area	Downgradient Plume Area				CPOC Area	
	GW009S	GW012S	GW014S	GW014S (field dup.)	GW147S	GW150S	GW253I
Temperature (degrees C)	20.5	22.4	20.5	NA	21.1	18.3	18.5
Specific Conductivity (µS/cm)	340	914	535	NA	1085	368	402
Dissolved Oxygen (mg/L)	0.43	0.01	0.01	NA	0.01	0.06	0.06
pH (standard units)	6.37	6.14	6.24	NA	4.90	6.56	6.51
Oxidation/Reduction Potential (mV)	-37.8	-35.1	-16.4	NA	119.4	-42.3	-43.7
Total Organic Carbon (mg/L)	24.83	70.05	26.42	24.80	957.4	14.2	17.18

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
AOC = area of concern
CPOC = conditional point of compliance
degrees C = degrees Celsius
field dup. = field duplicate
mg/L = milligrams per liter
mV = millivolts

Table 24: AOC-060 Concentrations of Constituents of Concern [1, 2]
August 15, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Levels [4]	Well ID [3]						
		Source Area	Cross-Gradient Wells			Downgradient Plume Well	CPOC Area	
		GW009S	GW012S	GW014S	GW014S (field dup.)	GW147S	GW150S	GW253I
Volatile Organic Compounds (µg/L)								
cis -1,2-Dichloroethene	0.08	**0.170**	**1.83**	**0.189**	**0.186**	**5.10**	**0.105**	**0.0934**
Trichloroethene	0.02	**0.0346**	**0.0990**	0.0144 J	0.0136 J	**2.76**	0.0106 J	0.0137 J
Vinyl Chloride	0.26	**0.439**	**0.936**	**0.410**	**0.405**	**1.61**	0.165	0.146

Notes:
1. Data qualifiers are as follows:
   J = The value is estimated.
2. **Bolded** values exceed the cleanup levels.
3. S = shallow well; I = intermediate well.
4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

Abbreviations:
µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
field dup. = field duplicate

Table 25: AOC-090 Groundwater Elevation Data

August 13 & 14, 2024

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]
GW176S	10 to 14.3	20.15	6.57	13.58
GW178S	11.2 to 15.5	22.73	8.07	14.66
GW189S	4 to 14	22.01	6.77	15.24
GW207S	7.3 to 12	21.12	6.68	14.44
GW208S	6.3 to 11	22.45	7.77	14.68

Notes:

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

Abbreviations:

AOC = area of concern

bgs = below ground surface

TOC = top of casing

Table 26: AOC-090 Primary Geochemical Indicators[1]
August 13 & 14, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID [2]				
	Source Area	Downgradient Plume Area	Shallow Zone CPOC Area		
	GW189S [3]	GW176S	GW178S	GW207S	GW208S
Temperature (degrees C)	17.5	16.1	15.7	16.7	20.3
Specific Conductivity (µS/cm)	303	528	395	460	1600
Dissolved Oxygen (mg/L)	0.01	0.01	0.04	0.01	0.26
pH (standard units)	6.47	6.19	6.20	6.32	5.34
Oxidation/Reduction Potential (mV)	-44.7	-49.7	-30.5	-42.2	22.1
Total Organic Carbon (mg/L)	7.18	NA	NA	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.
3. GW189S is the replacement well for GW168S.

Abbreviations:
µS/cm = microsiemens per centimeter
AOC = area of concern
CPOC = conditional point of compliance
degrees C = degrees Celsius
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed

Table 27: AOC-090 Concentrations of Constituents of Concern [1, 2]
August 13 & 14, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Levels [4]	Well ID [3]				
		Source Area	Downgradient Plume Area	Shallow Zone CPOC Area		
		GW189S [5]	GW176S	GW178S	GW207S	GW208S
Chlorinated Volatile Organic Compounds (µg/L)						
1,1,2,2-Tetrachloroethane	0.17	**0.181**	NA	NA	NA	NA
1,1,2-Trichloroethane	0.2	0.200 U	NA	NA	NA	NA
1,1-Dichloroethene	0.057	0.0338	NA	NA	NA	NA
Acetone	300	5.00 U	NA	NA	NA	NA
Benzene	0.8	0.200 U	NA	NA	NA	NA
Carbon Tetrachloride	0.23	0.200 U	NA	NA	NA	NA
Chloroform	2	0.200 U	NA	NA	NA	NA
cis-1,2-Dichloroethene	2.4	1.15	NA	NA	NA	NA
Methylene Chloride	2	1.00 U	NA	NA	NA	NA
Toluene	75	1.34	NA	NA	NA	NA
trans-1,2-Dichloroethene	53.9	0.200 U	NA	NA	NA	NA
Tetrachloroethene	0.05	0.0200 U	NA	NA	NA	NA
Trichloroethene	0.08	**0.109**	NA	NA	NA	NA
Vinyl Chloride	0.13	0.121	**0.287**	**0.395**	**0.313**	**0.359**
Total Petroleum Hydrocarbons (µg/L)						
TPH-G (C7-C12)	800	470	NA	NA	NA	NA
TPH-D (C12-C24)	500	427	NA	NA	NA	NA
TPH-O (C24-C38)	500	**838**	NA	NA	NA	NA

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.
4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.
5. GW189S is the replacement well for GW168S.

Abbreviations:
µg/L = micrograms per liter
AOC = area of concern
CPOC = conditional point of compliance
NA = not analyzed
TPH-D = total petroleum hydrocarbons as diesel
TPH-G = total petroleum hydrocarbons as gasoline
TPH-O = total petroleum hydrocarbons as motor oil

Table 28: Apron A Groundwater Elevation Data

August 15, 2024

Boeing Renton Facility, Renton, Washington

Well ID[1]	Screen Interval Depth (feet bgs)	TOC Elevation (feet)	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet)
GW263S	8 to 18	21.68	7.65	14.03
GW264S	8 to 18	21.55	5.86	15.69
GW265S	8 to 18	21.64	6.22	15.42

Notes

1. S = shallow well.

Abbreviations

bgs = below ground surface

NA = not available

TOC = top of casing

Table 29: Apron A Primary Geochemical Indicators[1]
August 15, 2024
Boeing Renton Facility, Renton, Washington

Parameter	Well ID[2]
	Source Area
	GW264S
Temperature (degrees C)	17.9
Specific Conductivity (µS/cm)	778
Dissolved Oxygen (mg/L)	0.06
pH (standard units)	6.10
Oxidation/Reduction Potential (mV)	-44.8
Total Organic Carbon (mg/L)	65.86

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
mg/L = milligrams per liter
mV = millivolts

Table 30: Apron A Concentrations of Constituents of Concern [1]
August 15, 2024
Boeing Renton Facility, Renton, Washington

Analyte	Cleanup Levels	Well ID[2] GW264S
Volatile Organic Compounds (µg/L)		
cis- 1,2-Dichloroethene	NE	0.200 U
Vinyl Chloride	NE	0.480

Notes
1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
2. S = shallow well.

Abbreviations
µg/L = micrograms per liter
NE = not established

APPENDIX A

SUMMARY OF GROUNDWATER SAMPLING METHODOLOGY

TABLE A-1: GROUNDWATER COMPLIANCE MONITORING PLAN

Boeing Renton Facility, Renton, Washington

Cleanup Action Area	Monitoring Wells[1, 2]					Constituents of Concern[4]	Analyses[5]
	Cross-Gradient Wells	Source Area Wells	Downgradient Plume Wells	CPOC Wells	Additional Water Level Monitoring Wells[3]		
SWMU-168	NA	NA	NA	GW230I	NA	VC	SW8260D SIM
SWMU-172/ SWMU-174	NA	GW152S and GW153S	GW172S, GW173S, and GW226S	GW232S, GW234S, GW235I, and GW236S	NA	*cis* -1,2-DCE, PCE, TCE, VC	SW8260D SIM[7]
						Arsenic, copper, and lead	EPA 6020A
Building 4-78/79 SWMU/AOC Group	NA	GW031S-R, GW033S, GW034S, and GW244S-R	NA	GW143S, GW237S, and GW240D	NA	VC, TCE, *cis* -1,2-DCE, benzene	SW8260D
						TPH-gasoline	NWTPH-Gx
Former Fuel Farm SWMU/AOC Group	NA	NA	NA	GW211S, GW221S, and GW224S	NA	TPH-jet fuel, TPH-diesel	NWTPH-Dx
AOC-001/ AOC-002[6]	GW213S-R, GW214S-R, GW215S-R	GW193S-R	GW190S-R, GW191D-R, GW192S-R, and GW246S-R	GW185S-R, GW195S-R, GW196D-R, GW197S-R, and GW245S-R	NA	Benzene	SW8260D
						TCE, *cis* -1,2-DCE, 1,1-dichloroethene, VC	SW8260D SIM[7]
AOC-003	NA	GW249S	GW188S	GW247S-R and GW248I	NA	VC	SW8260D
AOC-004	NA	GW250S	NA	NA	NA	Lead	EPA 6020A
AOC-060	GW012S and GW014S	GW009S	GW147S	GW150S and GW253I	GW010S and GW011D	VC, TCE, cis-1,2-DCE	SW8260D SIM[7]
AOC-090[8]	NA	GW189S	GW176S	GW178S, GW207S, and GW208S	NA	1,1,2-Trichloroethane, acetone, benzene, toluene, carbon tetrachloride, chloroform, *cis* -1,2-DCE, *trans* -1,2-DCE, methylene chloride	SW8260D
						1,1-Dichloroethene, 1,1,2,2-tetrachloroethane, VC, PCE, TCE	SW8260D SIM[7]
						TPH-gasoline	NWPTH-Gx
						TPH-diesel, TPH-motor oil	NWTPH-Dx
Apron A	NA	GW264S	NA	NA	GW263S, GW265S	*cis* -1,2-DCE and VC	SW8260D

Notes:

1. The EDR presents the groundwater monitoring frequency for each SWMU/AOC. All sites are monitored on a semi-annual basis with sampling events occurring in February and August.
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. Monitoring wells were abandoned on 11/25/2019 prior to Apron R construction and were replaced upon completion of construction.
7. 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.
8. GW189S will be sampled for CVOCs and TPH, all other wells will only be sampled for VC.

Abbreviations:

AOC = area of concern
cis -1,2-DCE = *cis* -1,2 dichloroethene
COCs = constituents of concern
CPOC = conditional point of compliance
CVOCs = chlorinated volatile organic compounds
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

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

Boeing Renton Facility, Renton, Washington

Cleanup Action Area	Groundwater Monitoring Wells				Primary Geochemical Parameters[1, 2]
	Cross-Gradient Wells	Source Area Wells	Downgradient Plume Wells	CPOC Wells	Indicators
SWMU-168	NA	NA	NA	GW230I	Dissolved oxygen, pH, ORP, temperature, specific conductance
SWMU-172/SWMU-174	NA	GW152S and GW153S	GW172S, GW173S, and GW226S	GW232S, GW234S, GW235I, and GW236S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC
Building 4-78/79 SWMU/AOC Group	NA	GW031S-R, GW033S, GW034S, and GW244S-R	NA	GW143S, GW237S, and GW240D	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC
Former Fuel Farm SWMU/AOC Group	NA	NA	NA	GW211S, GW221S, and GW224S	Dissolved oxygen, pH, ORP, temperature, specific conductance
AOC-001/AOC-002[3]	GW213S-R, GW214S-R, GW215S-R	GW193S-R	GW190S-R, GW191D-R, GW192S-R, and GW246S-R	GW185S-R, GW195S-R, GW196D-R, GW197S-R, and GW245S-R	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC
AOC-003	NA	GW249S	GW188S	GW247S-R and GW248I	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC
AOC-004	NA	GW250S	NA	NA	Dissolved oxygen, pH, ORP, temperature, specific conductance
AOC-060	GW012S and GW014S	GW009S	GW147S	GW150S and GW253I	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC
AOC-090	NA	GW189S	GW176S	GW178S, GW207S, and GW208S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC[4]
Apron A	NA	GW264S	NA	NA	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC

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.
   All MNA parameters are measured semiannually in all wells on a wet season/dry season basis.
3. Monitoring wells were abandoned on 11/25/2019 prior to Apron R construction and were replaced upon completion of construction.
4. TOC will only be analyzed in the groundwater from the source area well (GW189S).

Abbreviations:

AOC = area of concern
COCs = constituents of concern
CPOC = conditional point of compliance
MNA = monitored natural attenuation
NA = not applicable
ORP = oxidation reduction potential
SWMU = solid waste management unit
TOC = total organic carbon

APPENDIX B

FIELD FORMS

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW185S-R

1-Well Integrity

Date	08/12/2024	Time	15:21
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	15:21
Top of Casing	17.83	PID	NA
Initial DTW (ft)	3.62	Final DTW (ft)	3.83
Groundwater elevation	14.21	Well Depth (ft)	13.48
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	15:21
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	9.5	Depth to Water (ft bmp)	3.62
Measured Well Depth (ft bmp)	13.48	Water Column in Well	9.86
Gallons in Well	25.74		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	15:34	180	360	360	3.75	3.45	21.2	6.29	0.768	-60.4	54.50	NA
08/12/24	15:38	180	720	1080	3.78	1.66	21.1	6.34	0.767	-78.5	15.52	NA
08/12/24	15:42	180	720	1800	3.83	1.32	21	6.36	0.765	-90.2	6.89	NA
08/12/24	15:46	180	720	2520	3.87	0.36	21.1	6.36	0.765	-92	7.21	NA
08/12/24	15:50	180	720	3240	3.87	0.15	21.1	6.36	0.764	-95.3	10.18	NA
08/12/24	15:54	180	720	3960	3.85	0.19	21.1	6.36	0.763	-97.1	9.44	NA
08/12/24	15:58	180	720	4680	3.82	0.1	21	6.36	0.760	-99.2	9.23	NA

5-Sample

Date		Time	
Did Well Dewater?		Location of disposed purge water	
How were samples preserved?		How were samples transported to lab?	
Sample Date		Sample Time	
Sample ID		Duplicate Sample ID	
Dup Sample Time		Sampler's Name	
Sampler's Signature:		No. of Containers	
Matrix		Filtered?	
Bottles		Sampler Signature	
Remarks			

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW190S-R

1-Well Integrity

Date	08/12/2024	Time	11:11
Inspector Name	Lindsey Wielick	Well Permit Number	BPQ-882
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	11:25
Top of Casing	17.97	PID	NA
Initial DTW (ft)	3.79	Final DTW (ft)	3.88
Groundwater elevation	14.18	Well Depth (ft)	13.07
Free Product?	Yes	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	11:25
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	3.79
Measured Well Depth (ft bmp)	13.07	Water Column in Well	9.28
Gallons in Well	6.05		
Remarks	Flow rate: 250 mL at a 24/6 second cycle		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	11:15	200	100	100	3.79	6.54	25.7	6.84	0.002	20	26.94	NA
08/12/24	11:22	200	1400	1500	3.81	0.34	22.3	6.23	0.725	-73.5	14.52	NA
08/12/24	11:26	200	800	2300	3.83	0.07	22.1	6.24	0.734	-86.6	3.27	NA
08/12/24	11:30	200	800	3100	3.86	0.03	22.2	6.25	0.731	-94.4	5.98	NA
08/12/24	11:34	200	800	3900	3.87	-0.04	22.4	6.26	0.729	-100.1	9.68	NA
08/12/24	11:38	200	800	4700	3.85	-0.05	22.7	6.27	0.722	-104.3	5.82	Slight sheen on the purged water

5-Sample

Date	08/12/2024	Time	11:23
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	11:45
Sample ID	RGW190S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW191D-R

1-Well Integrity

Date	08/12/2024	Time	09:38
Inspector Name	Lindsey Wielick	Well Permit Number	BPQ-820
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	09:41
Top of Casing	17.94	PID	NA
Initial DTW (ft)	3.39	Final DTW (ft)	3.43
Groundwater elevation	14.55	Well Depth (ft)	34.02
Free Product?	Yes	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	09:42
Weather Conditions	Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	31	Depth to Water (ft bmp)	3.39
Measured Well Depth (ft bmp)	34.02	Water Column in Well	30.63
Gallons in Well	19.98		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	09:44	180	90	90	3.41	0.82	20.0	6.50	0.402	-73.0	82.88	NA
08/12/24	09:48	180	720	810	3.42	0.13	19.2	6.52	0.402	-78.4	13.97	NA
08/12/24	09:52	180	720	1530	3.41	0.03	19.2	6.53	0.411	-85.2	98.76	NA
08/12/24	09:56	180	720	2250	3.34	-0.01	19.5	6.53	0.409	-86.7	12.78	NA
08/12/24	10:00	180	720	2970	3.44	-0.04	19.0	6.53	0.410	-85.5	34.88	NA
08/12/24	10:04	180	720	3690	3.43	-0.07	18.8	6.54	0.409	-89.8	119.87	NA
08/12/24	10:08	180	720	4410	3.43	-0.07	18.8	6.54	0.408	-91.7	258.64	Turbidity won't stabilize
08/12/24	10:12	180	720	5130	3.43	-0.09	18.8	6.53	0.409	-93.4	68.32	Turbidity won't stabilize
08/12/24	10:16	180	720	5850	3.43	-0.09	18.8	6.54	0.406	-94.4	135.22	Final DTW: 3.43

5-Sample

Date	08/12/2024	Time	09:49
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	10:15
Sample ID	RGW191D-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW192S-R

1-Well Integrity

Date	08/12/2024	Time	10:38
Inspector Name	Lindsey Wielick	Well Permit Number	BPQ-821
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	10:39
Top of Casing	17.67	PID	NA
Initial DTW (ft)	3.43	Final DTW (ft)	5.01
Groundwater elevation	14.24	Well Depth (ft)	9.44
Free Product?	Yes	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	10:39
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	160
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	7	Depth to Water (ft bmp)	3.43
Measured Well Depth (ft bmp)	9.44	Water Column in Well	6.01
Gallons in Well	3.92		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	10:39	160	200	200	3.61	0.82	22.7	6.20	0.295	24.9	11.52	NA
08/12/24	10:43	160	640	840	4.09	0.09	23.2	6.19	0.291	14.7	9.63	NA
08/12/24	10:47	160	640	1480	4.32	0.06	23.4	6.19	0.290	12.9	8.56	NA
08/12/24	10:51	160	640	2120	4.56	0.02	23.5	6.20	0.288	13.6	8.07	NA
08/12/24	10:55	160	640	2760	4.69	-0.02	23.7	6.19	0.285	17.1	7.77	Flow rate: 90 seconds for 250 mL with a 25/5 cycle

5-Sample

Date	08/12/2024	Time	10:48
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	10:55
Sample ID	RGW192S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW193S-R

1-Well Integrity

Date	08/12/2024	Time	08:23
Inspector Name	Lindsey Wielick	Well Permit Number	BPQ-818
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	08:26
Top of Casing	18.39	PID	NA
Initial DTW (ft)	4.39	Final DTW (ft)	4.24
Groundwater elevation	14.0	Well Depth (ft)	12.29
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	08:34
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	7.9	Depth to Water (ft bmp)	4.39
Measured Well Depth (ft bmp)	12.29	Water Column in Well	7.9
Gallons in Well	5.15		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	08:44	180	180	180	4.21	0.81	20.3	5.13	1.808	0.7	72.38	NA
08/12/24	08:48	180	720	900	4.29	0.1	20.4	5.08	2.353	-3.7	62.39	NA
08/12/24	08:52	180	720	1620	4.23	0.14	20.4	5.08	2.355	-6.1	62.11	NA
08/12/24	08:56	180	720	2340	4.23	0.15	20.4	5.08	2.347	-10.7	43.33	NA
08/12/24	09:00	180	720	3060	4.23	0.05	20.5	5.08	2.333	-15.2	26.44	NA
08/12/24	09:04	180	720	3780	4.24	-0.05	20.6	5.09	2.307	-19.6	33.56	NA
08/12/24	09:08	180	720	4500	4.24	-0.06	20.6	5.09	2.296	-23.4	32.34	NA
08/12/24	09:12	180	720	5220	4.24	-0.07	20.6	5.09	2.275	-27.3	30.79	Final DTW 4.24

5-Sample

Date	08/12/2024	Time	08:53
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	09:15
Sample ID	RGW193S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW195S-R

1-Well Integrity

Date	08/12/2024	Time	13:01
Inspector Name	Lindsey Wielick	Well Permit Number	BPQ-824
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	13:01
Top of Casing	18.45	PID	NA
Initial DTW (ft)	4.38	Final DTW (ft)	4.38
Groundwater elevation	14.07	Well Depth (ft)	11.68
Free Product?	Yes	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	13:02
Weather Conditions	Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	160
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	9.5	Depth to Water (ft bmp)	4.38
Measured Well Depth (ft bmp)	11.68	Water Column in Well	7.3
Gallons in Well	4.76		
Remarks	Flow rate: 250 mL at 23/7 cycle (3x)		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	13:07	160	80	80	4.32	4.29	23.9	6.42	0.438	-58.8	14.29	NA
08/12/24	13:11	160	640	720	4.38	0.26	22.0	6.39	0.453	-71.7	7.25	NA
08/12/24	13:15	160	640	1360	4.37	0.03	21.4	6.40	0.456	-77.2	8.58	NA
08/12/24	13:19	160	640	2000	4.35	0.02	21.5	6.39	0.470	-79.1	8.31	NA
08/12/24	13:23	160	640	2640	4.33	0.79	21.6	6.39	0.476	-81.2	17.82	NA
08/12/24	13:27	160	640	3280	4.36	0.15	21.7	6.39	0.478	-82.4	14.30	Slight sheen on the purged water
08/12/24	13:31	160	640	3920	3.34	0.09	21.2	6.38	0.481	-83.0	14.47	NA
08/12/24	13:35	160	640	4560	4.35	-0.06	21.3	6.36	0.486	-83.6	14.07	NA

5-Sample

Date	08/12/2024	Time	13:12
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	13:45
Sample ID	RGW195S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW196D-R

1-Well Integrity

Date	08/12/2024	Time	13:51
Inspector Name	Lindsey Wielick	Well Permit Number	BPQ-825
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	13:51
Top of Casing	18.43	PID	NA
Initial DTW (ft)	4.23	Final DTW (ft)	4.31
Groundwater elevation	14.2	Well Depth (ft)	34.34
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	13:51
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	125
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	31	Depth to Water (ft bmp)	4.23
Measured Well Depth (ft bmp)	34.34	Water Column in Well	30.11
Gallons in Well	19.64		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	13:54	125	125	125	4.27	0.69	20.3	6.30	0.501	-65.7	9.81	NA
08/12/24	13:58	125	500	625	4.28	0.14	20.7	6.30	0.483	-61.4	6.78	NA
08/12/24	14:02	125	500	1125	4.28	-0.03	20.3	6.30	0.487	-63.9	9.66	NA
08/12/24	14:06	125	500	1625	4.26	-0.05	20.8	6.30	0.492	-65.2	5.65	NA
08/12/24	14:10	125	500	2125	4.25	-0.06	21.0	6.30	0.489	-63.5	7.98	Flow rate: 259 mL at 22/8 cycle (4x)

5-Sample

Date	08/12/2024	Time	14:07
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	14:15
Sample ID	RGW196D-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW197S-R

1-Well Integrity

Date	08/12/2024	Time	14:35
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	14:35
Top of Casing	18.34	PID	NA
Initial DTW (ft)	4.27	Final DTW (ft)	4.28
Groundwater elevation	14.07	Well Depth (ft)	12.15
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	14:35
Weather Conditions	Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	10	Depth to Water (ft bmp)	4.27
Measured Well Depth (ft bmp)	12.15	Water Column in Well	7.88
Gallons in Well	20.58		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	14:38	200	100	100	4.28	0.4	21.8	8.12	0.28	-163.2	12.28	NA
08/12/24	14:42	200	800	900	4.24	0.03	21.5	8.93	0.289	-233.5	7.76	NA
08/12/24	14:46	200	800	1700	4.26	-.03	21.5	8.94	0.29	-243	7.57	NA
08/12/24	14:50	200	800	2500	4.28	-.06	21.4	8.9	0.289	-246.1	7.35	NA
08/12/24	14:54	200	800	3300	4.26	-0.07	21.3	8.89	0.292	-249.7	6.30	Flow rate: 250 mL at 24/6 sec cycle (2x)

5-Sample

Date	08/12/2024	Time	14:39
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	15:05
Sample ID	RGW197S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW213S-R

1-Well Integrity

Date	08/12/2024	Time	10:47
Inspector Name	Jacklyn Perkins	Well Permit Number	BPQ-829
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	No; DO did not stabilize, below 0.10mg/L
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	10:47
Top of Casing	18.14	PID	NA
Initial DTW (ft)	3.80	Final DTW (ft)	4.77
Groundwater elevation	14.34	Well Depth (ft)	12.89
Free Product?	No	Well Dry?	N
Remarks	Sharp cheesy odor		

3-Wellhead

Date	08/12/2024	Time	10:47
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	3.80
Measured Well Depth (ft bmp)	12.89	Water Column in Well	9.09
Gallons in Well	5.93		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	10:51	200	100	100	3.98	0.54	21.0	4.53	4.712	17.5	49.74	NA
08/12/24	10:55	200	800	900	4.07	0.18	20.8	4.61	5.434	-0.5	21.39	NA
08/12/24	10:59	200	800	1700	4.19	0.12	20.8	4.62	5.502	-4.62	17.55	NA
08/12/24	11:03	200	800	2500	4.24	0.09	20.8	4.62	5.527	-10.9	15.92	NA
08/12/24	11:08	200	1000	3500	4.32	0.07	20.8	4.62	5.536	-11.6	14.81	NA
08/12/24	11:13	200	1000	4500	4.47	0.06	20.9	4.62	5.562	-10.1	14.49	NA

5-Sample

Date	08/12/2024	Time	10:53
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	11:15
Sample ID	RGW213S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	 Jacklyn Perkins	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW214S-R

1-Well Integrity

Date	08/12/2024	Time	08:59
Inspector Name	Jacklyn Perkins	Well Permit Number	BPQ-828
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	08:35
Top of Casing	18.27	PID	NA
Initial DTW (ft)	3.69	Final DTW (ft)	4.77
Groundwater elevation	14.58	Well Depth (ft)	13.35
Free Product?	No	Well Dry?	N
Remarks	Sharp cheesey smell		

3-Wellhead

Date	08/12/2024	Time	09:14
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	250
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	3.69
Measured Well Depth (ft bmp)	13.35	Water Column in Well	9.66
Gallons in Well	6.30		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	08:59	250	1000	1000	4.08	1.05	19.6	4.02	3.661	-72.1	170.89	NA
08/12/24	09:03	250	1000.0	2000.0	4.29	0.91	19.7	4.02	3.661	-124.4	146.97	NA
08/12/24	09:08	250	1250.0	3250.0	4.42	0.82	19.8	4.02	3.663	-163.9	167.72	NA
08/12/24	09:12	250	1000.0	4250.0	4.58	0.77	20.1	4.03	3.666	-176.8	165.65	NA
08/12/24	09:16	250	1000.0	5250.0	4.71	0.74	20.4	4.03	3.668	-177.8	160.92	NA
08/12/24	09:19	250	750.0	6000.0	4.79	0.75	20.5	4.03	3.662	-183.6	167.1	NA

5-Sample

Date	08/12/2024	Time	09:03
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	09:10
Sample ID	RGW214S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW215S-R

1-Well Integrity

Date	08/12/2024	Time	09:50
Inspector Name	Jacklyn Perkins	Well Permit Number	BPQ-830
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	No; DO did not stabilize, below 0.10 mg/L
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments	Sharp cheesy odor		

2-Gauging

Date	08/12/2024	Time	09:50
Top of Casing	18.22	PID	NA
Initial DTW (ft)	3.77	Final DTW (ft)	4.88
Groundwater elevation	14.45	Well Depth (ft)	12.88
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	09:50
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	3.77
Measured Well Depth (ft bmp)	12.88	Water Column in Well	9.11
Gallons in Well	5.94		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	09:54	200	200	200	3.80	0.44	20.4	4.06	4.272	-143.9	279.9	NA
08/12/24	09:58	200	800.0	1000.0	4.04	0.23	20.6	4.05	4.480	-168.5	251.03	NA
08/12/24	10:00	200	400.0	1400.0	4.18	0.14	20.7	4.05	4.470	-164.7	340.88	NA
08/12/24	10:04	200	800.0	2200.0	4.38	0.11	20.6	4.05	4.467	-165.6	67.31	NA
08/12/24	10:09	200	1000.0	3200.0	4.54	0.09	20.7	4.05	4.481	-178.4	74.68	NA
08/12/24	10:13	200	800.0	4000.0	4.64	0.04	20.8	4.06	4.487	-176.2	66.03	NA
08/12/24	10:17	200	800.0	4800.0	4.70	0.06	20.8	4.06	4.492	-175.42	68.26	NA

5-Sample

Date	08/12/2024	Time	10:11
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	10:20
Sample ID	RGW215S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	 Jacklyn Perkins	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW245S-R

1-Well Integrity

Date	08/12/2024	Time	14:09
Inspector Name	Jacklyn Perkins	Well Permit Number	BPQ-826
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments	Sampling tubing stained dark grey/black, moderate petroleum odor from purged water		

2-Gauging

Date	08/12/2024	Time	14:09
Top of Casing	18.32	PID	NA
Initial DTW (ft)	4.25	Final DTW (ft)	4.29
Groundwater elevation	14.07	Well Depth (ft)	12.59
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	14:11
Weather Conditions	Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	4.25
Measured Well Depth (ft bmp)	12.59	Water Column in Well	8.34
Gallons in Well	5.44		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	14:13	200	100	100	4.27	1.87	23.9	6.60	0.491	-80.6	7.75	NA
08/12/24	14:17	180	720.0	820.0	4.30	0.27	22.4	7.23	0.524	-149.0	3.66	NA
08/12/24	14:22	180	900.0	1720.0	4.28	0.11	22.2	7.39	0.528	-188.5	2.86	NA
08/12/24	14:27	180	900.0	2620.0	3.29	0.06	22.3	7.43	0.530	-213.0	2.40	NA
08/12/24	14:31	180	720.0	3340.0	4.31	0.04	22.4	7.45	0.528	-232.2	1.88	NA
08/12/24	14:35	180	720.0	4060.0	4.29	0.03	22.2	7.49	0.524	-250.2	1.67	NA
08/12/24	14:39	180	720.0	4780.0	4.29	0.02	21.8	7.51	0.522	-260.5	1.50	NA
08/12/24	14:43	180	720.0	5500.0	4.29	0.01	22.1	7.51	0.521	-267.3	1.20	NA
08/12/24	14:47	180	720.0	6220.0	4.29	0.01	22.0	7.52	0.521	-269.8	1.19	NA

5-Sample

Date	08/12/2024	Time	14:15
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	14:40
Sample ID	RGW245S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	 Jacklyn Perkins	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	Greyish tinge		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW246S-R

1-Well Integrity

Date	08/12/2024	Time	13:11
Inspector Name	Jacklyn Perkins	Well Permit Number	BPQ-823
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	13:11
Top of Casing	17.85	PID	NA
Initial DTW (ft)	3.68	Final DTW (ft)	3.71
Groundwater elevation	14.17	Well Depth (ft)	13.25
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	13:24
Weather Conditions	Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	9	Depth to Water (ft bmp)	3.68
Measured Well Depth (ft bmp)	13.25	Water Column in Well	9.57
Gallons in Well	6.24		
Remarks	NA		

Detailed Low Flow Sampling Info

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98057
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4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	13:19	200	200	200	3.70	1.17	23.0	5.97	0.620	-9.9	5.99	NA
08/12/24	13:23	200	800.0	1000.0	3.71	0.48	22.8	6.19	0.724	-60.7	6.34	NA
08/12/24	13:27	200	800.0	1800.0	3.71	0.43	22.9	6.21	0.833	-75.6	4.73	NA
08/12/24	13:31	200	800.0	2600.0	3.71	0.75	22.5	6.22	0.732	-81.7	5.65	NA
08/12/24	13:35	200	800.0	3400.0	3.71	0.77	22.6	6.23	0.732	-85.7	6.16	NA
08/12/24	13:40	200	1000.0	4400.0	3.71	0.79	23.0	6.23	0.731	-89.5	7.17	NA

5-Sample

Date	08/12/2024	Time	13:19
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	13:40
Sample ID	RGW246S-R-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	 Jacklyn Perkins	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW188S

1-Well Integrity

Date	08/13/2024	Time	15:15
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	All bolts stripped, some cracks in pavement		

2-Gauging

Date	08/13/2024	Time	15:15
Top of Casing	18.78	PID	NA
Initial DTW (ft)	4.20	Final DTW (ft)	4.53
Groundwater elevation	14.58	Well Depth (ft)	13.95
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	15:55
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	8.5	Depth to Water (ft bmp)	4.20
Measured Well Depth (ft bmp)	13.95	Water Column in Well	9.75
Gallons in Well	1.59		
Remarks	NA		

Detailed Low Flow Sampling Info

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98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	15:17	180	90	90	4.20	1.36	19.9	5.98	0.468	7.8	64.87	NA
08/13/24	15:21	180	720	810	4.26	0.25	19.1	6.08	0.473	-22.9	97.69	NA
08/13/24	15:25	180	720	1530	4.29	0.11	18	6.29	0.463	-49.2	30.25	NA
08/13/24	15:29	180	720	2250	4.33	0.09	18	6.3	0.457	-54.2	16.52	NA
08/13/24	15:33	180	720	2970	4.34	0.07	18.1	6.29	0.452	-55.9	19.06	NA
08/13/24	15:37	180	720	3690	4.36	.06	18	6.29	0.445	-57.1	9.04	NA
08/13/24	15:41	180	720	4410	4.5	0.04	17.3	6.28	0.442	-57.2	6.74	NA
08/13/24	15:45	180	720	5130	4.28	0.05	17.8	6.28	0.441	-57.1	8.96	Purging stopped ~15:44, well rewatere

5-Sample

Date	08/13/2024	Time	15:55
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	15:50
Sample ID	RGW188S-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

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Client: The Boeing Company

Photos

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Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW247S-R

1-Well Integrity

Date	08/13/2024	Time	14:09
Inspector Name	Lindsey Wielick	Well Permit Number	BPQ-827
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/13/2024	Time	14:49
Top of Casing	18.93	PID	NA
Initial DTW (ft)	4.58	Final DTW (ft)	4.71
Groundwater elevation	14.35	Well Depth (ft)	14.03
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	14:49
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	220
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	4
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	4.58
Measured Well Depth (ft bmp)	14.03	Water Column in Well	9.45
Gallons in Well	6.17		
Remarks	Purge rate: 250 mL at 24/6 cycle (2.25x)		

Detailed Low Flow Sampling Info

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98057
Client: The Boeing Company

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4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	14:53	220	220	220	4.65	0.59	20.1	6.26	0.554	-36.6	9.31	NA
08/13/24	14:57	220	880	1100	4.70	0.04	19.4	6.28	0.554	-52.1	5.99	NA
08/13/24	15:01	220	880	1980	4.72	-0.04	19.4	6.29	0.554	-57.0	2.92	NA
08/13/24	15:05	220	880	2860	4.75	-0.08	19.1	6.29	0.556	-59.3	6.94	NA
08/13/24	15:09	220	880	3740	4.73	-0.09	19.1	6.29	0.554	-60.9	3.11	NA

5-Sample

Date	08/13/2024	Time	14:56
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	15:15
Sample ID	RGW247S-R-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

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Client: The Boeing Company

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RGW248I

1-Well Integrity

Date	08/13/2024	Time	14:09
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	No	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Date	08/13/2024	Time	15:59
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	
No Apparent Physical Damage		Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump

Detailed Low Flow Sampling Info

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Client: The Boeing Company

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Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	All 3 bolts missing, 2 bolt holes broken off, no exterior or interior id		
Comments	All 3 bolts missing, 2 bolt holes broken off, no exterior or interior id		

2-Gauging

Date	08/13/2024	Time	14:10
Top of Casing	18.78	PID	NA
Initial DTW (ft)	4.40	Final DTW (ft)	4.65
Groundwater elevation	14.38	Well Depth (ft)	20
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	14:10
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	15	Depth to Water (ft bmp)	4.40
Measured Well Depth (ft bmp)	20	Water Column in Well	15.6
Gallons in Well	2.54		
Remarks	Flow rate: 250 mL at 20/10 sec cycle (2.5x)		

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	14:12	200	100	100	5.68	1.36	19.0	6.28	0.567	-37.7	112.78	NA
08/13/24	14:16	200	800	900	4.79	0.12	18.0	6.31	0.574	-44.4	77.22	NA
08/13/24	14:20	200	800	1700	4.72	-0.01	17.7	6.22	0.573	-41.2	43.29	NA
08/13/24	14:24	200	800	2500	4.83	0.02	17.8	6.23	0.573	-43.7	21.47	NA
08/13/24	14:28	200	800	3300	4.74	-0.07	17.6	6.24	0.572	-45.8	8.30	NA
08/13/24	14:32	200	800	4100	4.75	-0.07	17.5	6.25	0.571	-47.4	6.74	NA
08/13/24	14:36	200	800	4900	4.85	-0.09	17.5	6.25	0.573	-48.8	5.31	NA

Detailed Low Flow Sampling Info

Site: Boeing Renton
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Client: The Boeing Company

Project No: PS20203450

5-Sample

Date	08/13/2024	Time	14:14
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	14:45
Sample ID	RGW248I-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Photos

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Detailed Low Flow Sampling Info

Site: Boeing Renton
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98057
Client: The Boeing Company

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RGW249S

1-Well Integrity

Date	08/13/2024	Time	14:23
Inspector Name	Jacklyn Perkins	Well Permit Number	BID-805
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	Could use new gasket		

2-Gauging

Date	08/13/2024	Time	14:23
Top of Casing	18.85	PID	NA
Initial DTW (ft)	3.96	Final DTW (ft)	3.97
Groundwater elevation	14.89	Well Depth (ft)	14
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	15:11
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9	Depth to Water (ft bmp)	3.96
Measured Well Depth (ft bmp)	14	Water Column in Well	10.04
Gallons in Well	1.64		
Remarks	NA		

Detailed Low Flow Sampling Info

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Client: The Boeing Company

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4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	14:32	180	180	180	3.96	0.32	19.4	6.20	0.415	-43.3	127.27	NA
08/13/24	14:36	180	720	900	4.00	0.18	18.5	6.20	0.389	-43.3	10.72	Cleared bubbles off meter
08/13/24	14:40	180	720	1620	3.95	0.52	19.0	6.23	0.383	-46.9	8.72	NA
08/13/24	14:44	180	720	2340	3.97	0.09	18.4	6.21	0.388	-46.7	6.61	NA
08/13/24	14:48	180	720	3060	3.97	0.09	19.2	6.21	0.385	-47.8	6.66	NA
08/13/24	14:52	180	720	3780	3.97	0.07	19.2	6.21	0.383	-48.8	7.95	NA

5-Sample

Date	08/13/2024	Time	14:39
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	14:40
Sample ID	RGW249S-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

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Client: The Boeing Company

Photos

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Detailed Low Flow Sampling Info

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Client: The Boeing Company

Project No: PS20203450

RGW250S

1-Well Integrity

Date	08/12/2024	Time	15:26
Inspector Name	Lindsey Wielick	Well Permit Number	BIP-838
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/12/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/12/2024	Time	15:34
Top of Casing	19.31	PID	NA
Initial DTW (ft)	3.82	Final DTW (ft)	4.42
Groundwater elevation	15.49	Well Depth (ft)	14
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/12/2024	Time	15:34
Weather Conditions	Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	130
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	3.82
Measured Well Depth (ft bmp)	14	Water Column in Well	10.18
Gallons in Well	1.66		
Remarks	NA		

Detailed Low Flow Sampling Info

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Client: The Boeing Company

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4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/12/24	15:36	130	130	130	4.11	0.99	18.2	6.97	0.184	-65.2	137.99	NA
08/12/24	15:40	130	520	650	4.43	0.54	18.5	6.85	0.208	-71.1	269.12	NA
08/12/24	15:44	130	520	1170	4.58	0.08	18.5	6.85	0.210	-73.0	261.85	NA
08/12/24	15:48	130	520	1690	4.60	-0.02	18.4	6.86	0.204	-73.1	387.84	NA
08/12/24	15:52	130	520	2210	4.68	-0.04	18.4	6.88	0.196	-76.9	87.49	NA
08/12/24	15:56	130	520	2730	4.71	-0.07	18.4	6.89	0.185	-81.8	26.17	NA
08/12/24	16:00	130	520	3250	4.71	-0.08	18.3	6.90	0.179	-85.5	14.48	NA
08/12/24	16:04	130	520	3770	4.72	-0.10	18.3	6.91	0.176	-88.0	14.42	NA
08/12/24	16:08	130	520	4290	4.78	-0.10	18.2	6.92	0.175	-90.1	14.08	Flow rate polt bottle at 23/7 cycle (5x)

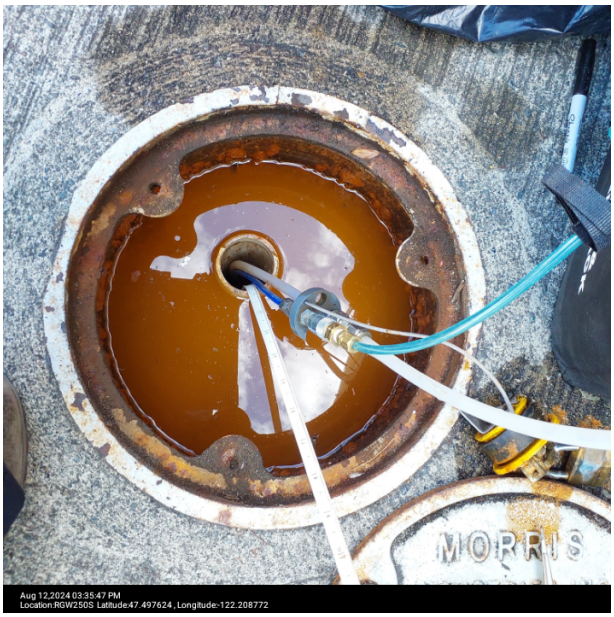
5-Sample

Date	08/12/2024	Time	15:26
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/12/2024	Sample Time	16:05
Sample ID	RGW250S-08122024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	2
Matrix	Water	Filtered?	NO
Bottles	2x 250mL HNO3 poly	Sampler Signature	Lindsey Wielick
Remarks	MS/MSD		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Photos



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Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW009S

1-Well Integrity

Date	08/15/2024	Time	14:33
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	No
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Date	08/15/2024	Time	16:00
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	No
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	Replaced bladder pump with refurbished geotech pump	Pump	Geotech Bladder Pump

Detailed Low Flow Sampling Info

Site: Boeing Renton
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98057
Client: The Boeing Company

Project No: PS20203450

Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	No internal or external id, underneath carpet tile under desk #1B14.11		
Comments	No internal or external id, underneath carpet tile under desk #1B14.11. Could use new gasket.		

2-Gauging

Date	08/15/2024	Time	14:33
Top of Casing	19.36	PID	NA
Initial DTW (ft)	5.09	Final DTW (ft)	5.08
Groundwater elevation	14.27	Well Depth (ft)	14.5
Free Product?	No	Well Dry?	N
Date	08/15/2024	Time	16:01
Top of Casing	19.36	PID	NA
Initial DTW (ft)	5.03	Final DTW (ft)	5.08
Groundwater elevation	14.33	Well Depth (ft)	14.5
Free Product?	No	Well Dry?	N
Remarks	NA		
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	14:33
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9.5	Depth to Water (ft bmp)	5.09
Measured Well Depth (ft bmp)	14.5	Water Column in Well	9.41
Gallons in Well	1.53	Date	08/15/2024
Time	16:17	Weather Conditions	Sunny
Purge Method	Low-flow Bladder Pump	Purge Volume Units	ml
Purge Rate	200	Water Quality Meter	YSI
Sampling Type	Low Flow	Casing Material	PVC
Casing Diameter (in)	2	Pump Intake Depth (ft bmp)	9.5
Depth to Water (ft bmp)	5.03	Measured Well Depth (ft bmp)	14.5
Water Column in Well	9.47	Gallons in Well	1.54

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Remarks	NA
Remarks	NA

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	16:01	200	300	300	5.07	1.11	20.8	6.35	0.356	1.1	15.29	NA
08/15/24	16:05	200	800	1100	5.08	0.64	20.8	6.35	0.347	-18.9	18.48	NA
08/15/24	16:10	200	1000	2100	5.08	0.46	20.7	6.36	0.342	-31.1	12.76	NA
08/15/24	16:14	200	800	2900	5.08	0.44	20.6	6.36	0.341	-35.6	11.98	NA
08/15/24	16:18	200	800	3700	5.08	0.43	20.5	6.37	0.340	-37.8	12.17	NA

5-Sample

Date	08/15/2024	Time	16:06
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	16:20
Sample ID	RGW009S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW012S

1-Well Integrity

Date	08/15/2024	Time	15:47
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	1 bolt hole dethreaded, no interior id		

2-Gauging

Date	08/15/2024	Time	15:51
Top of Casing	19.11	PID	NA
Initial DTW (ft)	4.83	Final DTW (ft)	5.15
Groundwater elevation	14.28	Well Depth (ft)	14.5
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	15:47
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	140
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9.5	Depth to Water (ft bmp)	4.83
Measured Well Depth (ft bmp)	14.5	Water Column in Well	9.67
Gallons in Well	6.33		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	15:53	140	200	200	5.04	0.71	22.3	6.15	1.052	34.8	47.4	NA
08/15/24	15:57	140	560	760	5.36	0.08	22.3	6.12	1.042	0.9	33.82	NA
08/15/24	16:01	140	560	1320	5.56	0.03	22.2	6.13	1.049	-8.8	24.14	NA
08/15/24	16:05	140	560	1880	5.28	-.03	22.1	6.13	1.018	-22.4	18.85	NA
08/15/24	16:09	140	560	2440	5.07	-0.04	22.2	6.13	0.998	-27.7	16.55	NA
08/15/24	16:13	140	560	3000	5.28	-.06	21.9	6.14	0.924	-32.5	21.76	NA
08/15/24	16:17	140	560	3560	5.02	-0.06	22.1	6.14	0.918	-34.2	19.01	NA
08/15/24	16:21	140	560	4120	5.16	-0.06	22.4	6.14	0.914	-35.1	20.07	NA

5-Sample

Date	08/15/2024	Time	16:01
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	16:25
Sample ID	RGW012S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW014S

1-Well Integrity

Date	08/15/2024	Time	15:02
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	No interior id, dedicated tubing is smaller diameter and attachable piece is very yellowed		

2-Gauging

Date	08/15/2024	Time	15:02
Top of Casing	19.24	PID	NA
Initial DTW (ft)	4.93	Final DTW (ft)	5.06
Groundwater elevation	14.31	Well Depth (ft)	14.4
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	15:47
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9.5	Depth to Water (ft bmp)	4.93
Measured Well Depth (ft bmp)	14.4	Water Column in Well	9.47
Gallons in Well	6.18		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	15:07	180	180	180	5.09	0.73	21.4	6.08	0.651	41.1	20.20	NA
08/15/24	15:11	180	720	900	5.14	0.12	21.1	6.19	0.654	14.4	10.39	NA
08/15/24	15:15	180	720	1620	5.09	0.01	20.8	6.22	0.651	1.3	7.38	NA
08/15/24	15:19	180	720	2340	5.11	-.02	20.6	6.22	0.609	-5	6.44	NA
08/15/24	15:23	180	720	3060	5.18	-.05	20.5	6.22	0.59	-8.8	5.83	NA
08/15/24	15:27	180	720	3780	5.13	-0.06	20.5	6.23	0.566	-12.1	5.41	NA
08/15/24	15:31	180	720	4500	5.13	-0.07	20.5	6.24	0.549	-14.6	5.21	NA
08/15/24	15:35	180	720	5220	5.14	-0.08	20.5	6.24	0.535	-16.4	5.01	Conduct didn't stabilize

5-Sample

Date	08/15/2024	Time	15:02
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	15:45
Sample ID	RGW014S-08152024	Duplicate Sample ID	DUP3-08152024
Dup Sample Time	00:00	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW147S

1-Well Integrity

Date	08/15/2024	Time	13:41
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/15/2024	Time	13:41
Top of Casing	18.73	PID	NA
Initial DTW (ft)	4.53	Final DTW (ft)	4.53
Groundwater elevation	14.2	Well Depth (ft)	15.2
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	13:42
Weather Conditions	Partly Sunny, Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	250
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	10	Depth to Water (ft bmp)	4.53
Measured Well Depth (ft bmp)	15.2	Water Column in Well	10.67
Gallons in Well	1.74		
Remarks	Purge: 250 mL at 24/6 cycle (2x)		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	13:42	250	125	125	4.54	0.05	20.6	4.78	1.242	166.7	86.56	NA
08/15/24	13:46	250	1000	1125	4.56	0.06	19.9	4.79	1.262	156.0	61.60	NA
08/15/24	13:50	250	1000	2125	4.58	-.04	20	4.79	1.291	145	27.1	NA
08/15/24	13:54	250	1000	3125	4.58	-.06	20	4.81	1.249	139.8	34.87	NA
08/15/24	13:58	250	1000	4125	4.61	-.06	20.1	4.84	1.206	133.8	48.17	NA
08/15/24	14:02	250	1000	5125	4.55	-.07	20.1	4.86	1.128	128.7	45.31	NA
08/15/24	14:06	250	1000	6125	4.55	-.08	20.1	4.88	1.123	125.3	25.45	NA
08/15/24	14:10	250	1000	7125	4.55	-.08	20.3	4.88	1.095	122.2	26.49	NA
08/15/24	14:14	250	1000	8125	4.55	-.07	21.1	4.9	1.085	119.4	30.39	Conduct and turbidity didn't stabilize

5-Sample

Date	08/15/2024	Time	13:43
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	14:15
Sample ID	RGW147S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW150S

1-Well Integrity

Date	08/15/2024	Time	14:46
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	No id card, one bolt missing, bolt holes stripped. Could use new gasket.		

2-Gauging

Date	08/15/2024	Time	14:47
Top of Casing	19.1	PID	NA
Initial DTW (ft)	4.88	Final DTW (ft)	4.91
Groundwater elevation	14.22	Well Depth (ft)	18.3
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date		Time	
Weather Conditions		Purge Method	
Purge Volume Units		Purge Rate	
Water Quality Meter		Sampling Type	
Casing Material		Casing Diameter (in)	
Pump Intake Depth (ft bmp)		Depth to Water (ft bmp)	
Measured Well Depth (ft bmp)		Water Column in Well	
Gallons in Well			
Remarks			

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	14:46	200	100	100	4.89	0.32	19.0	6.50	0.430	10.8	15.32	NA
08/15/24	14:51	200	1000	1100	4.90	0.14	18.6	6.56	0.369	-27.7	15.19	NA
08/15/24	14:56	200	1000	2100	4.91	0.09	18.4	6.56	0.377	-33.3	16.46	NA
08/15/24	15:00	200	800	2900	4.90	0.07	18.3	6.56	0.371	-39.2	15.19	NA
08/15/24	15:04	200	800	3700	4.90	0.06	18.3	6.56	0.368	-42.3	15.66	NA

5-Sample

Date	08/15/2024	Time	14:57
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	15:10
Sample ID	RGW150S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW253I

1-Well Integrity

Date	08/15/2024	Time	13:52
Inspector Name	Jacklyn Perkins	Well Permit Number	BID-810
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	Pumped out ponded water
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	Needs new gasket, locking cap		

2-Gauging

Date	08/15/2024	Time	13:52
Top of Casing	19.02	PID	NA
Initial DTW (ft)	4.79	Final DTW (ft)	4.80
Groundwater elevation	14.23	Well Depth (ft)	20
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	13:59
Weather Conditions	Partly Sunny, Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	220
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	15	Depth to Water (ft bmp)	4.79
Measured Well Depth (ft bmp)	20	Water Column in Well	15.21
Gallons in Well	2.48		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	13:53	220	100	100	4.80	0.73	18.8	6.44	0.397	28.1	52.35	NA
08/15/24	13:57	220	880	980	4.83	0.21	18.2	6.48	0.399	-12.1	61.32	NA
08/15/24	14:01	220	880	1860	4.82	0.12	18.1	6.51	0.400	-28.8	17.42	NA
08/15/24	14:05	220	880	2740	4.81	0.10	18.1	6.52	0.399	-35.0	16.19	NA
08/15/24	14:09	220	880	3620	5.81	0.07	18.4	6.51	0.401	-40.0	16.44	NA
08/15/24	14:13	220	880	4500	4.82	0.06	18.5	6.51	0.402	-43.7	17.01	Sheen on purged water

5-Sample

Date	08/15/2024	Time	13:58
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	14:10
Sample ID	RGW253I-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	 Jacklyn Perkins	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

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Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW176S

1-Well Integrity

Date	08/14/2024	Time	09:41
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	No bolts present		

2-Gauging

Date	08/14/2024	Time	09:45
Top of Casing	20.15	PID	NA
Initial DTW (ft)	6.57	Final DTW (ft)	6.28
Groundwater elevation	13.58	Well Depth (ft)	14.8
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	09:46
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	12.15	Depth to Water (ft bmp)	6.57
Measured Well Depth (ft bmp)	14.8	Water Column in Well	8.23
Gallons in Well	1.34		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	09:48	200	200	200	5.77	1.09	16.0	6.24	0.558	-22.6	12.28	NA
08/14/24	09:52	200	800	1000	6.03	0.13	15.8	6.23	0.537	-41.0	8.78	NA
08/14/24	09:56	200	800	1800	6.29	0.01	16.0	6.17	0.528	-44.2	8.08	NA
08/14/24	10:00	200	800	2600	6.39	-0.04	16.1	6.19	0.528	-49.7	3.48	NA

5-Sample

Date	08/14/2024	Time	09:41
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	10:05
Sample ID	RGW176S-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	3
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW178S

1-Well Integrity

Date	08/14/2024	Time	10:00
Inspector Name	Jacklyn Perkins	Well Permit Number	AHN071
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	Interior lid stripped, missing gasket		

2-Gauging

Date	08/14/2024	Time	10:00
Top of Casing	22.73	PID	NA
Initial DTW (ft)	8.07	Final DTW (ft)	8.25
Groundwater elevation	14.66	Well Depth (ft)	15.1
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	10:17
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	13.35	Depth to Water (ft bmp)	8.07
Measured Well Depth (ft bmp)	15.1	Water Column in Well	7.03
Gallons in Well	1.15		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	10:03	200	300	300	8.21	1.18	15.6	6.09	0.483	25.8	12.08	Moderat sewage smell
08/14/24	10:08	200	1000	1300	8.26	0.24	15.5	6.22	0.456	-22.6	6.32	NA
08/14/24	10:12	200	800	2100	8.26	0.13	15.5	6.22	0.443	-25.3	5.59	NA
08/14/24	10:16	200	800	2900	8.23	0.10	15.5	6.23	0.427	-27.7	4.88	NA
08/14/24	10:20	200	800	3700	8.27	0.09	15.6	6.24	0.421	-30.0	4.55	NA
08/14/24	10:24	200	800	4500	8.29	0.07	15.7	6.22	0.411	-29.9	4.33	NA
08/14/24	10:28	200	800	5300	8.29	0.05	15.7	6.21	0.402	-30.1	4.09	NA
08/14/24	10:32	200	800	6100	8.32	0.04	15.6	6.21	0.398	-30.2	4.15	NA
08/14/24	10:35	200	600	6700	4.33	0.04	15.7	6.2	0.395	-30.5	4.24	NA

5-Sample

Date	08/14/2024	Time	10:14
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	10:30
Sample ID	RGW178S-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	3
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW189S

1-Well Integrity

Date	08/14/2024	Time	07:55
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/14/2024	Time	08:16
Top of Casing	22.01	PID	NA
Initial DTW (ft)	6.77	Final DTW (ft)	7.43
Groundwater elevation	15.24	Well Depth (ft)	14.1
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	08:16
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	260
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9	Depth to Water (ft bmp)	6.77
Measured Well Depth (ft bmp)	14.1	Water Column in Well	7.33
Gallons in Well	1.20		
Remarks	Flow rate: 500 mL at 26/4 cycle (3.75x)		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	08:35	260	130	130	7.01	0.15	16.9	6.39	0.32	-28.4	10.96	NA
08/14/24	08:39	260	1040	1170	7.51	-.02	16.6	6.43	0.321	-35.6	5.37	NA
08/14/24	08:43	260	1040	2210	7.59	-.05	17.1	6.44	0.316	-38.6	2.56	NA
08/14/24	08:47	260	1040	3250	7.76	-.06	17.4	6.45	0.310	-40.9	2.01	NA
08/14/24	08:51	260	1040	4290	7.7	-.05	17.5	6.46	0.306	-43.1	2.96	NA
08/14/24	08:55	260	1040	5330	7.78	-.05	17.5	6.47	0.303	-44.7	4.67	NA

5-Sample

Date	08/14/2024	Time	09:05
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	09:05
Sample ID	RGW189S-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	9
Matrix	Water	Filtered?	NO
Bottles	9x HCl VOA, 1x 250mL H2SO4 amber, 1x 500mL amber	Sampler Signature	Lindsey Wielick
Remarks	MS/MSD collected		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW207S

1-Well Integrity

Date	08/14/2024	Time	10:15
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	Missing 3 bolts		

2-Gauging

Date	08/14/2024	Time	10:15
Top of Casing	21.12	PID	NA
Initial DTW (ft)	6.68	Final DTW (ft)	6.74
Groundwater elevation	14.44	Well Depth (ft)	12.6
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	10:17
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	160
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9.65	Depth to Water (ft bmp)	6.68
Measured Well Depth (ft bmp)	12.6	Water Column in Well	5.92
Gallons in Well	0.97		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	10:18	160	80	80	6.84	1.73	16.6	6.25	0.441	8.1	11.93	NA
08/14/24	10:22	160	640	720	6.92	0.17	16.2	6.29	0.462	-18.7	9.38	NA
08/14/24	10:26	160	640	1360	6.78	0.02	16.7	6.30	0.461	-32.4	9.75	NA
08/14/24	10:30	160	640	2000	6.80	-0.04	16.5	6.31	0.460	-38.4	6.26	NA
08/14/24	10:34	160	640	2640	6.78	-0.06	16.7	6.32	0.460	-42.2	9.03	NA

5-Sample

Date	08/14/2024	Time	10:22
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	10:35
Sample ID	RGW207S-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	3
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW208S

1-Well Integrity

Date	08/14/2024	Time	08:51
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	No	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	Cleared out discarded locks
Any repairs/replacement (explain)	New lock	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	Missing 3 screws, remaining screw stripped, could use new gasket and locking cap. Runway style lid. Sampling hose has kink		

2-Gauging

Date	08/14/2024	Time	08:51
Top of Casing	22.45	PID	NA
Initial DTW (ft)	7.77	Final DTW (ft)	7.98
Groundwater elevation	14.68	Well Depth (ft)	11.4
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	09:02
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	8.65	Depth to Water (ft bmp)	7.77
Measured Well Depth (ft bmp)	11.4	Water Column in Well	3.63
Gallons in Well	0.59		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Remarks NA

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	08:56	200	250	250	8.3	0.74	18.4	5.11	1.827	74.3	64.02	Moderat to strong sewage odor
08/14/24	09:01	200	1000	1250	8.07	0.39	18.5	5.26	1.733	45.9	21.47	NA
08/14/24	09:05	200	800	2050	8.12	0.31	18.6	5.32	1.635	35.2	18.65	NA
08/14/24	09:09	150	600	2650	8.03	0.36	18.9	5.33	1.614	30.5	19.29	Turned pump down
08/14/24	09:13	150	600	3250	8.04	0.32	19.1	5.34	1.605	26.6	19.34	NA
08/14/24	09:17	150	600	3850	8.02	0.28	19.1	5.35	1.597	23.9	19.68	NA
08/14/24	09:21	150	600	4450	7.97	0.27	19.1	5.34	1.599	22.8	19.68	NA
08/14/24	09:25	150	600	5050	7.96	0.26	20.33	5.34	1.600	22.1	20.58	NA

5-Sample

Date	08/14/2024	Time	09:08
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	09:30
Sample ID	RGW208S-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	3
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA	Sampler Signature	Jacklyn Perkins

Remarks NA

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW264S

1-Well Integrity

Date	08/15/2024	Time	11:17
Inspector Name	Jacklyn Perkins	Well Permit Number	BJU-193
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	No	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	Peristaltic (lowest setting, sample if drawdown exceeded)
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	Needs new gasket, cap does not lock. Needs new cap. Thick bacterial mat/sludge in bottom of well		

2-Gauging

Date	08/15/2024	Time	11:18
Top of Casing	21.55	PID	NA
Initial DTW (ft)	5.86	Final DTW (ft)	11.12
Groundwater elevation	15.69	Well Depth (ft)	18
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	11:25
Weather Conditions	Sunny	Purge Method	Peristaltic Pump
Purge Volume Units	ml	Purge Rate	160
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	13	Depth to Water (ft bmp)	5.86
Measured Well Depth (ft bmp)	18	Water Column in Well	12.14
Gallons in Well	1.98		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Remarks NA

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	11:23	160	160	160	6.52	0.95	17.4	6.03	0.804	18.6	53.60	NA
08/15/24	11:28	160	800	960	7.45	0.26	18.1	6.08	0.789	-22.7	10.33	NA
08/15/24	11:32	160	640	1600	8.16	0.21	17.8	6.09	0.791	-31.3	15.48	NA
08/15/24	11:36	160	640	2240	8.72	0.16	18.0	6.10	0.779	-36.4	12.09	NA
08/15/24	11:40	160	640	2880	9.39	0.14	18.1	6.11	0.771	-39.2	13.85	NA
08/15/24	11:44	160	640	3520	9.97	0.09	18.0	6.11	0.776	-12.3	22.73	NA
08/15/24	11:48	160	640	4160	10.34	0.10	18.4	6.12	0.767	-43.8	12.09	NA
08/15/24	11:52	160	640	4800	10.73	0.07	17.9	6.11	0.764	-48.9	12.21	NA
08/15/24	11:56	160	640	5440	10.73	0.06	17.9	6.10	0.778	-44.8	15.99	NA

5-Sample

Date	08/15/2024	Time	11:24
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	12:00
Sample ID	RGW264S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	4
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins

Remarks NA

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW031S-R

1-Well Integrity

Date	08/14/2024	Time	12:29
Inspector Name	Lindsey Wielick	Well Permit Number	BNE-654
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/14/2024	Time	12:30
Top of Casing	19.59	PID	NA
Initial DTW (ft)	5.40	Final DTW (ft)	5.4
Groundwater elevation	14.19	Well Depth (ft)	25
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	12:31
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	250
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	20	Depth to Water (ft bmp)	5.40
Measured Well Depth (ft bmp)	25	Water Column in Well	19.6
Gallons in Well	3.20		
Remarks	250 mL at 23/7 sec cycle (2x)		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	12:32	250	500	500	5.4	2.71	23.1	6.11	0.421	2.1	13.48	NA
08/14/24	12:36	250	1000	1500	5.4	0.25	20.5	6.1	0.501	-5.5	37.8	NA
08/14/24	12:40	250	1000	2500	5.4	0.02	19.5	6.1	0.487	-10.1	41.22	NA
08/14/24	12:44	250	1000	3500	5.4	-.02	19.4	6.1	0.481	-12.3	38.68	NA
08/14/24	12:48	250	1000	4500	5.4	-.04	19.3	6.1	0.481	-14.2	8.27	NA
08/14/24	12:52	250	1000	5500	5.4	-.06	19.2	6.1	0.48	-15.6	5.93	NA
08/14/24	12:56	250	1000	6500	5.4	-.07	19.2	6.09	0.48	-16.3	5.98	Sheen on purged water

5-Sample

Date	08/14/2024	Time	12:39
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	13:05
Sample ID	RGW031S-R-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW033S

1-Well Integrity

Date	08/14/2024	Time	14:57
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	No interior or exterior id, painted over, missing 2 bolts, local surface of paved area ponds at this location		

2-Gauging

Date	08/14/2024	Time	14:58
Top of Casing	19.49	PID	NA
Initial DTW (ft)	5.32	Final DTW (ft)	5.32
Groundwater elevation	14.17	Well Depth (ft)	25
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	14:59
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	160
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	20	Depth to Water (ft bmp)	5.32
Measured Well Depth (ft bmp)	25	Water Column in Well	19.68
Gallons in Well	3.21		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Remarks: Flow rate: 250 mL at 24/6 sec cycle (3x)

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	15:03	160	200	200	5.32	1.45	22.4	5.95	0.611	32.7	8.94	NA
08/14/24	15:06	160	480	680	5.32	0.22	19.6	6.09	0.602	2.9	6.9	NA
08/14/24	15:10	160	640	1320	5.32	0.03	20.5	6.14	0.603	-13.8	11.2	NA
08/14/24	15:14	160	640	1960	5.32	0.02	20.9	6.16	0.606	-22.7	8.72	NA
08/14/24	15:18	160	640	2600	5.32	-.06	19.3	6.17	0.603	-24.9	9.34	NA
08/14/24	15:22	160	640	3240	5.32	-.09	19.2	6.16	0.602	-27.8	4.66	NA

5-Sample

Date	08/14/2024	Time	15:15
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	15:25
Sample ID	RGW033S-08142024	Duplicate Sample ID	Dup2-08142024
Dup Sample Time	00:00	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW034S

1-Well Integrity

Date	08/14/2024	Time	14:25
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	Missing 2 bolts, no interior or exterior id		

2-Gauging

Date	08/14/2024	Time	14:25
Top of Casing	19.65	PID	NA
Initial DTW (ft)	5.43	Final DTW (ft)	5.43
Groundwater elevation	14.22	Well Depth (ft)	25
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	14:26
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	225
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	20	Depth to Water (ft bmp)	5.43
Measured Well Depth (ft bmp)	25	Water Column in Well	19.57
Gallons in Well	3.19		
Remarks	Flow rate: 250 mL at 22/8 sec (2.25x)		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	14:27	225	450	450	5.43	0.47	19.8	6.35	0.447	-20.4	6.42	NA
08/14/24	14:31	225	900	1350	5.43	0.08	19.8	6.33	0.431	-27.8	4.44	NA
08/14/24	14:35	225	900	2250	5.43	-0.01	19.7	6.32	0.429	-32.8	3.83	NA
08/14/24	14:39	225	900	3150	5.43	-0.04	19.6	6.32	0.428	-36.1	3.37	NA

5-Sample

Date	08/14/2024	Time	14:28
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	14:45
Sample ID	RGW034S-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW143S

1-Well Integrity

Date	08/14/2024	Time	15:56
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	No internal or external id, no bolt holes, missing all 3 bolts		

2-Gauging

Date	08/14/2024	Time	15:56
Top of Casing	19.81	PID	NA
Initial DTW (ft)	5.50	Final DTW (ft)	5.64
Groundwater elevation	14.31	Well Depth (ft)	15.9
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	15:56
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	12.5	Depth to Water (ft bmp)	5.50
Measured Well Depth (ft bmp)	15.9	Water Column in Well	10.4
Gallons in Well	1.70		
Remarks	Purge rate: 250 mL at 23/7 cycle (2.5x)		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	15:57	200	100	100	5.64	2.06	20.6	6.28	0.351	81.7	40.07	NA
08/14/24	16:01	200	800	900	5.62	0.40	19.5	6.38	0.425	25.6	10.98	NA
08/14/24	16:05	200	800	1700	5.62	0.28	19	6.37	0.419	7.4	8.39	NA
08/14/24	16:09	200	800	2500	5.62	0.21	18.8	6.34	0.415	-12.7	7.63	NA
08/14/24	16:13	200	800	3300	5.62	0.18	18.7	6.33	0.414	-18.3	7.45	NA
08/14/24	16:17	200	800	4100	5.62	0.16	18.7	6.33	0.414	-24.1	7.35	NA
08/14/24	16:21	200	800	4900	5.62	0.14	18.7	6.33	0.413	-27.9	7.80	NA

5-Sample

Date	08/14/2024	Time	16:06
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	16:20
Sample ID	RGW143S-08142025	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW237S

1-Well Integrity

Date	08/14/2024	Time	13:13
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	Pumped out ponded water
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	10-inch lid, missing 1 bolt, outside id illegible, thick bacterial growth inside well head, needs nw gasket. On line between 2nd and 3rd parking spots.		

2-Gauging

Date	08/14/2024	Time	13:13
Top of Casing	18.85	PID	NA
Initial DTW (ft)	4.57	Final DTW (ft)	4.63
Groundwater elevation	14.28	Well Depth (ft)	15
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	13:13
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	10	Depth to Water (ft bmp)	4.57
Measured Well Depth (ft bmp)	15	Water Column in Well	10.43
Gallons in Well	1.70		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Remarks NA

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	13:18	180	90	90	4.63	0.88	21.8	6.38	0.353	-8.6	314.93	NA
08/14/24	13:22	180	720	810	4.63	0.26	21.1	6.41	0.348	-23.6	265.96	NA
08/14/24	13:26	180	720	1530	4.63	0.19	21.1	6.41	0.340	-25.2	180.26	NA
08/14/24	13:30	180	720	2250	4.63	0.15	21.1	6.40	0.345	-29.4	67.44	NA
08/14/24	13:34	180	720	2970	4.63	0.13	21.0	6.40	0.347	-32.7	35.86	NA
08/14/24	13:38	180	720	3690	4.63	0.11	21.0	6.40	0.349	-35.3	25.76	NA
08/14/24	13:42	180	720	4410	4.63	0.10	21.0	6.39	0.350	-36.8	20.19	NA
08/14/24	13:48	180	1080	5490	4.63	0.06	20.9	6.39	0.350	-38.4	13.63	NA
08/14/24	13:52	180	720	6210	4.63	0.07	20.8	6.39	0.351	-39.1	17.59	NA

5-Sample

Date	08/14/2024	Time	13:33
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	13:50
Sample ID	RGW237S-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins

Remarks NA

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW240D

1-Well Integrity

Date	08/14/2024	Time	14:44
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	Pumped out water from well head
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Comments	All 3 bolts missing, no internal or external id, missing gasket. Inner lid threading stripped.		

2-Gauging

Date	08/14/2024	Time	14:45
Top of Casing	19.81	PID	NA
Initial DTW (ft)	6.49	Final DTW (ft)	10.81
Groundwater elevation	13.32	Well Depth (ft)	27
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	14:45
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	24.5	Depth to Water (ft bmp)	6.49
Measured Well Depth (ft bmp)	27	Water Column in Well	20.51
Gallons in Well	3.35		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	14:47	200	300	300	6.87	0.88	19.3	6.14	0.302	43.3	325.87	NA
08/14/24	14:52	200	1000	1300	7.59	0.22	17.7	6.48	0.281	-17.9	162.99	NA
08/14/24	14:56	200	800	2100	7.65	0.14	17.5	6.55	0.280	-40.6	108.46	NA
08/14/24	15:00	200	800	2900	7.78	0.11	17.5	6.55	0.279	-46.1	99.82	NA
08/14/24	15:04	200	800	3700	7.85	0.09	17.4	6.55	0.278	-51.8	34.77	Cleared bubbles from sensor
08/14/24	15:09	200	1000	4700	7.96	0.05	17.4	6.55	0.281	-54.9	25.18	NA
08/14/24	15:13	200	800	5500	8.01	0.04	17.3	6.54	0.282	-59.7	13.96	NA
08/14/24	15:17	200	800	6300	8.04	0.04	17.3	6.53	0.282	-56.6	11.66	NA

5-Sample

Date	08/14/2024	Time	14:58
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	15:20
Sample ID	RGW240D-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW244S-R

1-Well Integrity

Date	08/14/2024	Time	13:20
Inspector Name	Lindsey Wielick	Well Permit Number	BNE-655
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/14/2024	Instrument calibration time	07:00
Date	08/15/2024	Time	12:06
Inspector Name	Jacklyn Perkins	Well Permit Number	BNE-655
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable		Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris		Ponded Water Inside Casing	
No Apparent Physical Damage		Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/14/2024	Time	13:20
Top of Casing	19.42	PID	NA
Initial DTW (ft)	5.21	Final DTW (ft)	5.21
Groundwater elevation	14.21	Well Depth (ft)	15
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/14/2024	Time	13:21
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	225
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	10	Depth to Water (ft bmp)	5.21
Measured Well Depth (ft bmp)	15	Water Column in Well	9.79
Gallons in Well	1.60		
Remarks	250 mL at 24/6 cycle (2.25x)		

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/14/24	13:25	225	225	225	5.21	1.20	19.7	6.14	0.662	32.3	22.32	NA
08/14/24	13:29	225	900	1125	5.21	0.11	19.0	6.28	0.717	-16.0	18.17	NA
08/14/24	13:33	225	900	2025	5.21	0.01	18.7	6.29	0.704	-26.6	16.88	NA
08/14/24	13:37	225	900	2925	5.21	-0.03	18.6	6.29	0.690	-32.5	8.21	NA
08/14/24	13:41	225	900	3825	5.21	-0.06	18.6	6.30	0.682	-36.4	6.59	NA
08/14/24	13:45	225	900	4725	5.21	-0.06	19.0	6.30	0.673	-38.9	9.30	NA

5-Sample

Date	08/14/2024	Time	13:30

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/14/2024	Sample Time	13:55
Sample ID	RGW244S-R-08142024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	7
Matrix	Water	Filtered?	NO
Bottles	6x HCl VOA, 1x 250mL H2SO4 amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW211S

1-Well Integrity

Date	08/15/2024	Time	08:21
Inspector Name	Jacklyn Perkins	Well Permit Number	BAB-498
Type of well head	Flush Mount	Freely accessible	No
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED n.d. sample Pro SS & PE
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	Missing all 3 bolts, inner lid is stripped and blocked, missing gasket, could use new locking cap. Gravel nearby		

2-Gauging

Date	08/15/2024	Time	08:21
Top of Casing	27.77	PID	NA
Initial DTW (ft)	10.97	Final DTW (ft)	11.07
Groundwater elevation	16.8	Well Depth (ft)	14.75
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	08:22
Weather Conditions	Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	220
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	NA	Depth to Water (ft bmp)	10.97
Measured Well Depth (ft bmp)	14.75	Water Column in Well	3.78
Gallons in Well	0.62		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Remarks NA

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	08:21	220	220	220	11.5	1.04	17.7	6.27	0.257	25.7	82.60	NA
08/15/24	08:25	220	880	1100	11.04	0.39	17.6	6.26	0.244	14.4	30.15	NA
08/15/24	08:30	220	1100	2200	10.96	0.23	17.5	6.25	0.240	13.8	25.18	NA
08/15/24	08:35	220	880	3080	10.97	0.17	17.5	6.25	0.238	13.0	22.24	NA
08/15/24	08:39	220	880	3960	11.07	0.14	17.5	6.24	0.238	12.2	20.48	NA
08/15/24	08:43	220	880	4840	11.06	0.12	17.5	6.24	0.238	11.6	22.07	NA
08/15/24	08:47	220	880	5720	11.02	0.09	17.5	6.24	0.237	11.0	21.80	NA
08/15/24	08:51	220	880	6600	10.98	0.08	17.5	6.24	0.237	10.6	21.79	NA
08/15/24	08:55	220	880	7480	10.96	0.07	17.6	6.24	0.237	10.2	21.35	NA

5-Sample

Date	08/15/2024	Time	08:24
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	08:50
Sample ID	RGW211S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	2
Matrix	Water	Filtered?	NO
Bottles	2x 500mL amber	Sampler Signature	Jacklyn Perkins

Remarks NA

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Photos

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Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW221S

1-Well Integrity

Date	08/15/2024	Time	09:09
Inspector Name	Lindsey Wielick	Well Permit Number	BHB-417
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED n.d. sample Pro SS & PE
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	1 bolt missing. 2 bolts but not long enough to do anything.		

2-Gauging

Date	08/15/2024	Time	09:09
Top of Casing	27.93	PID	NA
Initial DTW (ft)	11.04	Final DTW (ft)	11.01
Groundwater elevation	16.89	Well Depth (ft)	15
Free Product?	No	Well Dry?	N
Remarks	Purge rate: 500 mL at 24/6 cycle (4.25x)		

3-Wellhead

Date	08/15/2024	Time	09:10
Weather Conditions	Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	230
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	10	Depth to Water (ft bmp)	11.04
Measured Well Depth (ft bmp)	15	Water Column in Well	3.96
Gallons in Well	0.65		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	09:11	230	460	460	11.01	1.30	20.1	6.10	0.273	85.2	110.42	NA
08/15/24	09:15	230	920	1380	11.01	0.20	18.2	6.30	0.281	42.9	34.12	NA
08/15/24	09:19	230	920	2300	11.01	0.04	18.4	6.33	0.278	30.5	9.57	NA
08/15/24	09:23	230	920	3220	11.01	-0.01	18.4	6.34	0.278	26.0	7.47	NA
08/15/24	09:27	230	920	4140	11.01	-0.04	18.5	6.34	0.277	23.1	6.37	Sheen on purged water

5-Sample

Date	08/15/2024	Time	09:13
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	09:35
Sample ID	RGW221S-08152025	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	2
Matrix	Water	Filtered?	NO
Bottles	2x 500mL amber	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW224S

1-Well Integrity

Date	08/15/2024	Time	08:06
Inspector Name	Lindsey Wielick	Well Permit Number	BHB440
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	QED n.d. sample Pro SS & PE
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	3 bolts missing		

2-Gauging

Date	08/15/2024	Time	08:08
Top of Casing	27.98	PID	NA
Initial DTW (ft)	11.41	Final DTW (ft)	11.80
Groundwater elevation	16.57	Well Depth (ft)	15
Free Product?	No	Well Dry?	N
Remarks	Flow rate: 500 mL at 24/6 cycle (4.25x)		

3-Wellhead

Date	08/15/2024	Time	08:08
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	230
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	10	Depth to Water (ft bmp)	11.41
Measured Well Depth (ft bmp)	15	Water Column in Well	3.59
Gallons in Well	2.34		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	08:10	230	230	230	11.78	1.46	19.4	5.98	0.172	109.8	54.69	NA
08/15/24	08:14	230	920	1150	11.82	0.93	18.7	5.99	0.17	81.2	27.8	NA
08/15/24	08:18	230	920	2070	11.88	0.18	18.9	6.07	0.184	68.7	9.18	NA
08/15/24	08:22	230	920	2990	11.83	0.05	18.9	6.12	0.184	59.5	5.98	NA
08/15/24	08:26	230	920	3910	11.85	0.01	18.9	6.13	0.184	53.9	5.38	NA
08/15/24	08:30	230	920	4830	11.80	-.02	18.9	6.15	0.184	49.7	4.85	Sheen on purged water

5-Sample

Date	08/15/2024	Time	08:12
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	08:45
Sample ID	RGW224S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	2
Matrix	Water	Filtered?	NO
Bottles	2x 500mL amber	Sampler Signature	Lindsey Wielick
Remarks	MS/MSD		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW230I

1-Well Integrity

Date	08/13/2024	Time	13:16
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	Pumped out ponded water
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	Could use new gasket, locking cap. Bacterial mats on inside of wellhead.		

2-Gauging

Date	08/13/2024	Time	13:16
Top of Casing	24.86	PID	NA
Initial DTW (ft)	7.89	Final DTW (ft)	7.91
Groundwater elevation	16.97	Well Depth (ft)	14
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	13:17
Weather Conditions	Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	160
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9	Depth to Water (ft bmp)	7.89
Measured Well Depth (ft bmp)	14	Water Column in Well	6.11
Gallons in Well	1		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	13:16	160	160	160	7.93	0.59	19.4	6.21	0.446	-29.6	22.85	NA
08/13/24	13:20	160	640	800	7.9	0.21	19.4	6.30	0.436	-48.2	9.61	NA
08/13/24	13:24	160	640	1440	7.94	0.15	19.9	6.30	0.426	-48.1	5.19	NA
08/13/24	13:28	160	640	2080	7.90	0.11	20.0	6.29	0.422	-46.8	6.12	NA
08/13/24	13:32	160	640	2720	7.91	0.10	20.2	6.28	0.419	-46.8	5.76	NA
08/13/24	13:36	160	640	3360	7.90	0.08	20.2	6.28	0.416	-46.6	5.46	NA
08/13/24	13:40	160	640	4000	7.91	0.07	20.2	6.28	0.414	-46.8	5.32	NA

5-Sample

Date	08/13/2024	Time	13:21
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	13:40
Sample ID	RGW230I-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	3
Matrix	Water	Filtered?	NO
Bottles	3 HCl VOA	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW152S

1-Well Integrity

Date	08/15/2024	Time	09:42
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/15/2024	Time	09:42
Top of Casing	26.98	PID	NA
Initial DTW (ft)	9.88	Final DTW (ft)	NA
Groundwater elevation	17.1	Well Depth (ft)	14.95
Free Product?	No	Well Dry?	N
Remarks	No final depth; water tape at top of pump		

3-Wellhead

Date		Time	
Weather Conditions		Purge Method	
Purge Volume Units		Purge Rate	
Water Quality Meter		Sampling Type	
Casing Material		Casing Diameter (in)	
Pump Intake Depth (ft bmp)		Depth to Water (ft bmp)	
Measured Well Depth (ft bmp)		Water Column in Well	
Gallons in Well			
Remarks			

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	09:51	140	70	70	10.95	0.49	18.9	5.04	1.693	119.3	174.33	NA
08/15/24	09:55	140	560	630	11.5	0.35	18.8	5.05	1.72	113.3	137.5	NA
08/15/24	09:59	140	560	1190	NA	0.46	19	5.06	1.729	103.3	108.26	Water tape at top of pump
08/15/24	10:03	140	560	1750	NA	0.17	19.1	5.06	1.735	99.1	122.3	NA
08/15/24	10:07	140	560	2310	NA	.06	19.3	5.05	1.757	93.8	66.22	NA
08/15/24	10:11	140	560	2870	NA	0.11	20.1	5.05	1.763	87.8	56.12	NA
08/15/24	10:15	140	560	3430	NA	.06	19.3	5.04	1.804	87.7	42.32	NA
08/15/24	10:19	140	560	3990	NA	-0.03	18.9	5.03	1.836	86.3	23.88	NA
08/15/24	10:23	140	560	4550	NA	.01	20	5.04	1.862	83.3	29.75	NA

5-Sample

Date	08/15/2024	Time	10:16
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	10:30
Sample ID	RGW152S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW153S

1-Well Integrity

Date	08/13/2024	Time	09:27
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	Missing 1 bolt		

2-Gauging

Date	08/13/2024	Time	09:27
Top of Casing	27.47	PID	NA
Initial DTW (ft)	10.64	Final DTW (ft)	11.23
Groundwater elevation	16.83	Well Depth (ft)	14.65
Free Product?	Yes	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	09:27
Weather Conditions	Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	150
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	12.5	Depth to Water (ft bmp)	10.64
Measured Well Depth (ft bmp)	14.65	Water Column in Well	4.01
Gallons in Well	0.65		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	09:27	150	200	200	11.02	3.96	17.7	6.45	0.292	-2.2	87.02	NA
08/13/24	09:31	150	600	800	11.30	0.43	17.2	6.52	0.311	-33.9	32.27	NA
08/13/24	09:35	150	600	1400	11.51	0.13	17.1	6.42	0.298	-25.2	18.26	NA
08/13/24	09:39	150	600	2000	11.37	0.08	17.2	6.42	0.296	-25.2	14.19	NA
08/13/24	09:43	150	600	2600	11.34	0.03	17.2	6.42	0.293	-24.6	9.79	NA
08/13/24	09:47	150	600	3200	10.33	-0.01	17.2	6.42	0.294	-25.8	7.97	NA
08/13/24	09:51	150	600	3800	11.35	-0.03	17.2	6.42	0.294	-27.2	9.45	Flow rate: 250 mL at 22/8 sec cycle (3x)

5-Sample

Date	08/13/2024	Time	09:29
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	10:05
Sample ID	RGW153S-R-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW172S

1-Well Integrity

Date	08/13/2024	Time	08:09
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	Missing all 3 bolts, interior filled with soil, no interior ID		

2-Gauging

Date	08/13/2024	Time	08:09
Top of Casing	26.44	PID	NA
Initial DTW (ft)	9.88	Final DTW (ft)	11.01
Groundwater elevation	16.56	Well Depth (ft)	17.82
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	08:10
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	140
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	13	Depth to Water (ft bmp)	9.88
Measured Well Depth (ft bmp)	17.82	Water Column in Well	7.94
Gallons in Well	1.30		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	08:09	140	140	140	10.46	0.73	18.2	6.50	0.422	-72.21	156.31	NA
08/13/24	08:13	140	560	700	10.83	0.27	17.4	6.67	0.308	-72.6	84.84	NA
08/13/24	08:17	140	560	1260	10.97	0.08	17.6	6.61	0.284	-60.6	36.63	NA
08/13/24	08:21	140	560	1820	10.89	0.15	17.8	6.53	0.282	-50.1	44.79	NA
08/13/24	08:25	140	560	2380	10.92	0.01	17.9	6.41	0.291	-37.7	22.52	NA
08/13/24	08:29	140	560	2940	10.97	-0.04	18.0	6.27	0.315	-26.9	12.27	NA
08/13/24	08:33	140	560	3500	10.96	-0.05	18.0	6.16	0.337	-19.2	10.23	NA
08/13/24	08:37	140	560	4060	11.04	-0.07	18.1	6.08	0.353	-13.3	15.26	Sheen on purged water
08/13/24	08:41	140	560	4620	10.95	-0.08	18.0	6.03	0.363	-8.8	17.09	Flow rate: 250 mL at 22/8 sec cycle (3.5x)

5-Sample

Date	08/13/2024	Time	08:18
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	08:45
Sample ID	RGW172S-08132024	Duplicate Sample ID	DUP1-08132024
Dup Sample Time	00:00	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

RGW173S

1-Well Integrity

Date	08/15/2024	Time	09:54
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	No	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Date	08/15/2024	Time	10:36
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable		Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris		Ponded Water Inside Casing	
No Apparent Physical Damage		Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	1 bolt missing, exterior ground pad cracking and crumbling		
Comments	No exterior/interior id, interior of wellhead rusted out and flaking off and cracked, 1 bolt missing, bolt holes dethreaded		

2-Gauging

Date	08/15/2024	Time	09:56
Top of Casing	26.51	PID	NA
Initial DTW (ft)	7.35	Final DTW (ft)	7.51
Groundwater elevation	19.16	Well Depth (ft)	17.2
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/15/2024	Time	09:57
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	150
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	13	Depth to Water (ft bmp)	7.35
Measured Well Depth (ft bmp)	17.2	Water Column in Well	9.85
Gallons in Well	1.61		
Remarks	NA		

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	09:54	150	200	200	7.46	2.26	18.5	6.25	0.397	73.6	137.93	NA
08/15/24	09:58	150	600	800	7.66	0.33	17.8	6.47	0.361	6.4	96.85	NA
08/15/24	10:02	150	600	1400	7.75	0.18	18.2	6.43	0.365	-3.8	49.88	NA
08/15/24	10:06	150	600	2000	7.80	0.13	18.2	6.38	0.385	-4.4	32.08	NA
08/15/24	10:10	150	600	2600	7.61	0.10	18.2	6.32	0.404	-4.0	22.36	NA
08/15/24	10:14	150	600	3200	7.50	0.09	18.2	6.31	0.411	-5.8	19.05	NA
08/15/24	10:18	150	600	3800	7.52	0.08	18.2	6.30	0.427	-7.6	16.29	NA

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

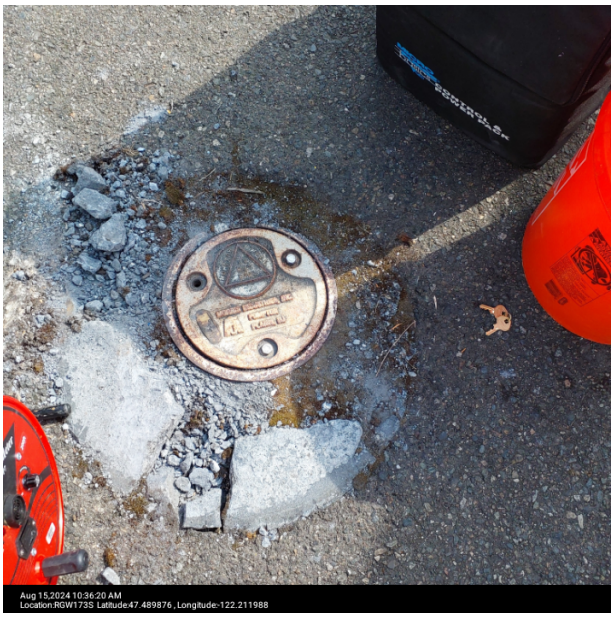
Project No: PS20203450

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/15/24	10:22	150	600	4400	7.51	0.09	18.2	6.31	0.432	-10.4	14.90	NA

5-Sample

Date	08/15/2024	Time	09:58
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/15/2024	Sample Time	10:25
Sample ID	RGW173S-08152024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Lindsey Wielick
Remarks	NA		

Photos



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Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW226S

1-Well Integrity

Date	08/13/2024	Time	10:14
Inspector Name	Lindsey Wielick	Well Permit Number	BHB-419
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	Missing all 3 bolts		

2-Gauging

Date	08/13/2024	Time	10:14
Top of Casing	26.86	PID	NA
Initial DTW (ft)	9.90	Final DTW (ft)	10.08
Groundwater elevation	16.96	Well Depth (ft)	20
Free Product?	Yes	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	10:19
Weather Conditions	Partly Cloudy, Partly Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	150
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	12.5	Depth to Water (ft bmp)	9.90
Measured Well Depth (ft bmp)	20	Water Column in Well	10.1
Gallons in Well	1.65		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	10:21	150	300	300	10.09	3.01	20.3	6.35	0.37	-29.9	80.72	NA
08/13/24	10:25	150	600	900	10.12	0.34	18.8	6.48	0.381	-51.2	47.28	NA
08/13/24	10:29	150	600	1500	10.17	0.17	19.0	6.45	0.366	-45.7	28.17	NA
08/13/24	10:33	150	600	2100	10.14	0.04	18.9	6.44	0.36	-42.4	24.98	NA
08/13/24	10:37	150	600	2700	10.14	0.00	19	6.43	0.355	-39.8	7.49	NA
08/13/24	10:41	150	600	3300	10.14	-.02	18.9	6.43	0.352	-38	8.42	NA
08/13/24	10:45	150	600	3900	10.14	-.04	18.9	6.43	0.351	-37.7	7.54	NA

5-Sample

Date	08/13/2024	Time	10:26
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	10:55
Sample ID	RGW226S-R-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW232S

1-Well Integrity

Date	08/13/2024	Time	12:38
Inspector Name	Lindsey Wielick	Well Permit Number	BID-798
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	2 bolts missing		

2-Gauging

Date	08/13/2024	Time	12:39
Top of Casing	24.45	PID	NA
Initial DTW (ft)	7.50	Final DTW (ft)	NA
Groundwater elevation	16.95	Well Depth (ft)	14
Free Product?	No	Well Dry?	N
Remarks	Couldn't get a final DTW - well was close to dewatering		

3-Wellhead

Date	08/13/2024	Time	13:16
Weather Conditions	Partly Sunny, Partly Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	125
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9	Depth to Water (ft bmp)	7.50
Measured Well Depth (ft bmp)	14	Water Column in Well	6.5
Gallons in Well	1.06		
Remarks	Couldn't get a flow rate due to well almost dewatering		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	12:45	125	125	125	7.90	1.98	20.2	5.98	0.497	8.1	7.36	NA
08/13/24	12:49	125	500	625	8.73	0.17	18.6	6.30	0.541	-33.3	9.30	NA
08/13/24	12:53	125	500	1125	9.32	0.06	18.9	6.27	0.533	-35.6	9.19	NA
08/13/24	12:57	125	500	1625	9.88	0.02	19.0	6.27	0.519	-36.0	9.61	NA
08/13/24	13:01	125	500	2125	10.29	0.01	19.3	6.27	0.51	-34.8	10.13	NA
08/13/24	13:05	125	500	2625	10.76	0.01	19.7	6.27	0.51	-36.2	9.9	NA

5-Sample

Date	08/13/2024	Time	12:46
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	13:15
Sample ID	RGW232S-R-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Lindsey Wielick
Sampler's Signature:	Lindsey Wielick	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Lindsey Wielick
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW234S

1-Well Integrity

Date	08/13/2024	Time	10:13
Inspector Name	Jacklyn Perkins	Well Permit Number	BID-841
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	No	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	2 missing bolts, thick bacteria mat in wellhead, possibly rusted, missing gasket		

2-Gauging

Date	08/13/2024	Time	10:13
Top of Casing	24.95	PID	NA
Initial DTW (ft)	8.66	Final DTW (ft)	8.68
Groundwater elevation	16.29	Well Depth (ft)	13
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	10:15
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	180
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	8	Depth to Water (ft bmp)	8.66
Measured Well Depth (ft bmp)	13	Water Column in Well	4.34
Gallons in Well	0.71		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	10:16	180	90	90	8.67	2.12	17.9	6.20	0.259	22.5	232.45	NA
08/13/24	10:21	180	900	990	8.67	0.29	17.8	6.34	0.239	-0.8	65.74	NA
08/13/24	10:25	180	720	1710	8.68	0.19	17.8	6.33	0.240	-1.6	28.72	NA
08/13/24	10:29	180	720	2430	8.70	0.14	17.8	6.32	0.241	-2.3	17.77	NA
08/13/24	10:33	180	720	3150	8.68	0.10	17.8	6.32	0.242	-3.0	11.39	NA
08/13/24	10:37	180	720	3870	8.68	0.09	17.9	6.32	0.241	-3.5	8.57	NA
08/13/24	10:41	180	720	4590	8.70	0.08	17.8	6.32	0.241	-3.8	6.51	NA
08/13/24	10:45	180	720	5310	8.67	0.07	17.8	6.32	0.241	-4.2	5.85	NA

5-Sample

Date	08/13/2024	Time	10:45
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	10:40
Sample ID	RGW234S-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Jacklyn Perkins
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW235I

1-Well Integrity

Date	08/13/2024	Time	09:27
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments	All 3 bolts missing, thick bacteria mats in wellhead, possibly rusted. Needs new gasket		

2-Gauging

Date	08/13/2024	Time	09:27
Top of Casing	24.9	PID	NA
Initial DTW (ft)	7.85	Final DTW (ft)	7.94
Groundwater elevation	17.05	Well Depth (ft)	25
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	09:27
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	200
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	20	Depth to Water (ft bmp)	7.85
Measured Well Depth (ft bmp)	25	Water Column in Well	17.15
Gallons in Well	2.80		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	09:29	200	100	100	7.93	1.98	18.0	6.55	0.197	16.8	23.87	NA
08/13/24	09:33	200	800	900	7.95	0.38	16.1	6.61	0.192	-2.8	25.92	NA
08/13/24	09:37	200	800	1700	7.95	0.18	15.9	6.67	0.188	-8.6	15.71	NA
08/13/24	09:41	200	800	2500	7.88	0.12	15.8	6.67	0.188	-8.6	8.25	NA
08/13/24	09:46	200	1000	3500	7.92	0.09	15.8	6.66	0.187	-8.2	5.51	NA
08/13/24	09:50	200	800	4300	7.9	.07	15.7	6.65	0.187	-7.8	3.66	NA
08/13/24	09:54	200	800	5100	7.94	.06	15.8	6.65	0.185	-7.7	3.52	NA
08/13/24	09:58	200	800	5900	7.95	.05	15.8	6.64	0.187	-7.9	3.19	NA

5-Sample

Date	08/13/2024	Time	09:43
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	10:00
Sample ID	RGW235I-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW236S

1-Well Integrity

Date	08/13/2024	Time	08:35
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	Yes
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	Pumped out ponded water.	Pump	GeoTech Bladder Pump
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/13/2024	Instrument calibration time	07:00
Comments			

2-Gauging

Date	08/13/2024	Time	08:35
Top of Casing	24.36	PID	NA
Initial DTW (ft)	6.11	Final DTW (ft)	6.23
Groundwater elevation	18.25	Well Depth (ft)	15
Free Product?	No	Well Dry?	N
Remarks	NA		

3-Wellhead

Date	08/13/2024	Time	08:40
Weather Conditions	Cloudy	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	125
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	10	Depth to Water (ft bmp)	6.11
Measured Well Depth (ft bmp)	15	Water Column in Well	8.89
Gallons in Well	1.45		
Remarks	Wellhead very rusted, covered in bacteria mats. Could use new gasket, locking cap.		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks
08/13/24	08:36	125	200	200	6.13	0.74	16.7	6.60	0.424	-64.8	151.28	NA
08/13/24	08:40	125	500	700	6.18	0.37	17.4	6.02	0.409	-72.7	117.29	NA
08/13/24	08:45	125	625	1325	6.22	0.26	17.5	6.62	0.384	-73.4	66.41	NA
08/13/24	08:49	125	500	1825	6.23	0.22	17.5	6.61	0.364	-68.1	47.35	NA
08/13/24	08:54	125	625	2450	6.24	0.18	17.6	6.69	0.348	-58.6	33.47	NA
08/13/24	08:58	125	500	2950	6.23	0.17	17.7	6.58	0.341	-52.2	29.48	NA
08/13/24	09:02	125	500.0	3450	6.23	0.16	17.7	6.57	0.338	-49.8	27.73	NA
08/13/24	09:06	125	500.0	3950	6.23	0.16	17.8	6.57	0.336	-44.0	27.01	NA

5-Sample

Date	08/13/2024	Time	08:46
Did Well Dewater?	No	Location of disposed purge water	Boeing RTN wastewater treatment plant
How were samples preserved?	Cooler with regular ice	How were samples transported to lab?	Sampler drop-off at lab
Sample Date	08/13/2024	Sample Time	09:10
Sample ID	RGW236S-08132024	Duplicate Sample ID	NA
Dup Sample Time	NA	Sampler's Name	Jacklyn Perkins
Sampler's Signature:	Jacklyn Perkins	No. of Containers	5
Matrix	Water	Filtered?	NO
Bottles	3x HCl VOA, 1x 250mL H2SO4 amber, 1x 250mL HNO3 poly	Sampler Signature	Jacklyn Perkins
Remarks	MS/MSD collected		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW010S

1-Well Integrity

Date	08/15/2024	Time	16:35
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	NA
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	Missing all 3 bolts, no interior ID tag, lid likely switched with RGW011, under carpet in aisle in office		

2-Gauging

Date	08/15/2024	Time	16:35
Top of Casing	19.47	PID	NA
Initial DTW (ft)	5.20	Final DTW (ft)	5.2
Groundwater elevation	14.27	Well Depth (ft)	14.5
Free Product?	No	Well Dry?	N
Remarks	Not sampled		

3-Wellhead

Date	08/15/2024	Time	16:35
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	NA
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	9.5	Depth to Water (ft bmp)	5.20
Measured Well Depth (ft bmp)	14.5	Water Column in Well	9.3
Gallons in Well	1.52		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

Remarks NA

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks

5-Sample

Date		Time	
Did Well Dewater?		Location of disposed purge water	
How were samples preserved?		How were samples transported to lab?	
Sample Date		Sample Time	
Sample ID		Duplicate Sample ID	
Dup Sample Time		Sampler's Name	
Sampler's Signature:		No. of Containers	
Matrix		Filtered?	
Bottles		Sampler Signature	

Remarks

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW011D

1-Well Integrity

Date	08/15/2024	Time	16:39
Inspector Name	Lindsey Wielick	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	Yes	Outside ID Intact	NA
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	No
No Apparent Physical Damage	No	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	NA
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	Under carpet in aisle, old lock 1g032- did not replace,missing 2 of 3 bolts, no exterior ID		

2-Gauging

Date	08/15/2024	Time	16:39
Top of Casing	19.49	PID	NA
Initial DTW (ft)	5.22	Final DTW (ft)	5.22
Groundwater elevation	14.27	Well Depth (ft)	39
Free Product?	No	Well Dry?	N
Remarks	Not sampled		

3-Wellhead

Date	08/15/2024	Time	16:39
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	mL	Purge Rate	NA
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	34	Depth to Water (ft bmp)	5.22
Measured Well Depth (ft bmp)	39	Water Column in Well	33.78
Gallons in Well	5.51		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks

5-Sample

Date		Time	
Did Well Dewater?		Location of disposed purge water	
How were samples preserved?		How were samples transported to lab?	
Sample Date		Sample Time	
Sample ID		Duplicate Sample ID	
Dup Sample Time		Sampler's Name	
Sampler's Signature:		No. of Containers	
Matrix		Filtered?	
Bottles		Sampler Signature	
Remarks			

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW263S

1-Well Integrity

Date	08/15/2024	Time	11:11
Inspector Name	Jacklyn Perkins	Well Permit Number	BIX-489
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	Pumped out ponded water
Any repairs/replacement (explain)	No	Pump	NA
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	Lock rusted shut. Did not replace. Could use new gasket. Could use new cap.		

2-Gauging

Date	08/15/2024	Time	11:12
Top of Casing	21.68	PID	NA
Initial DTW (ft)	7.65	Final DTW (ft)	7.65
Groundwater elevation	14.03	Well Depth (ft)	18
Free Product?	No	Well Dry?	N
Remarks	Not sampled		

3-Wellhead

Date	08/15/2024	Time	11:12
Weather Conditions	Sunny	Purge Method	Low-flow Bladder Pump
Purge Volume Units	ml	Purge Rate	NA
Water Quality Meter	YSI	Sampling Type	Low Flow
Casing Material	PVC	Casing Diameter (in)	2
Pump Intake Depth (ft bmp)	13	Depth to Water (ft bmp)	7.65
Measured Well Depth (ft bmp)	18	Water Column in Well	10.35
Gallons in Well	6.75		
Remarks	NA		

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks

5-Sample

Date		Time	
Did Well Dewater?		Location of disposed purge water	
How were samples preserved?		How were samples transported to lab?	
Sample Date		Sample Time	
Sample ID		Duplicate Sample ID	
Dup Sample Time		Sampler's Name	
Sampler's Signature:		No. of Containers	
Matrix		Filtered?	
Bottles		Sampler Signature	
Remarks			

Photos

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Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

RGW265S

1-Well Integrity

Date	08/15/2024	Time	11:13
Inspector Name	Jacklyn Perkins	Well Permit Number	No tag
Type of well head	Flush Mount	Freely accessible	Yes
Ground Pad Intact	Yes	Security Case and Cover	Yes
Lock Present and Operable	No	Outside ID Intact	No
Well Cap Present	Yes	Inside Measurement Point	No
Inside Casing Clear of Debris	Yes	Ponded Water Inside Casing	Yes
No Apparent Physical Damage	Yes	Any cleanup performed (explain)	No
Any repairs/replacement (explain)	No	Pump	NA
Total drawdown	NA	Did well meet SAP/WP stabilization requirements before sampling?	Yes
Instrument calibration date	08/15/2024	Instrument calibration time	07:00
Comments	Missing gasket. Cap doesnt lock, so no lock present. Could use new cap.		

2-Gauging

Date	08/15/2024	Time	11:14
Top of Casing	21.64	PID	NA
Initial DTW (ft)	6.22	Final DTW (ft)	6.22
Groundwater elevation	15.42	Well Depth (ft)	18
Free Product?	No	Well Dry?	N
Remarks	Not sampled		

3-Wellhead

Date		Time	
Weather Conditions		Purge Method	
Purge Volume Units		Purge Rate	
Water Quality Meter		Sampling Type	
Casing Material		Casing Diameter (in)	
Pump Intake Depth (ft bmp)		Depth to Water (ft bmp)	
Measured Well Depth (ft bmp)		Water Column in Well	
Gallons in Well			
Remarks			

Detailed Low Flow Sampling Info

Site: Boeing Renton
737 Logan Avenue N, Renton, Washington
98057
Client: The Boeing Company

Project No: PS20203450

4-Stabilization Parameters

Date	Time	Flow Rate	Purge Volume	Cuml Vol Purged	DTW (ft)	Dissolve Oxygen (mg/L)	Tempera (C)	pH (SU)	Spec Cond (mS/cm)	ORP (mV)	Turbidity (NTU)	Remarks

5-Sample

Date		Time	
Did Well Dewater?		Location of disposed purge water	
How were samples preserved?		How were samples transported to lab?	
Sample Date		Sample Time	
Sample ID		Duplicate Sample ID	
Dup Sample Time		Sampler's Name	
Sampler's Signature:		No. of Containers	
Matrix		Filtered?	
Bottles		Sampler Signature	
Remarks			

Photos

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APPENDIX C

DATA VALIDATION MEMOS

Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 16, 2024		
Subject:	Summary Data Quality Review August 2024 Boeing Renton Groundwater Sampling SWMU-168 ARI Work Order Number: 24H0262		

This memo presents the summary data quality review of one primary groundwater sample and one trip blank sample collected on August 13, 2024. 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 volatile organic compound vinyl chloride by U.S. Environmental Protection Agency (EPA) Method 8260D with selected ion monitoring.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGW230I-08132024	24H0262-01	vinyl chloride
TB2-08132024	24H0262-02	vinyl chloride

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, 2020).

ARI received the samples on August 13, 2024. The temperature of the cooler was recorded upon receipt and the cooler was below the maximum acceptable temperature of 6 degrees Celsius.

ORGANIC ANALYSES

Samples were analyzed for vinyl chloride. 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 analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted at other sites included in this sampling event.

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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 ARI work order number 24H0262 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. No problems were identified, and analytical performance was within specified limits.

RGW230I-08132024	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), 2020, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

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Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 17, 2024		

Subject: Summary Data Quality Review
August 2024 Boeing Renton Groundwater Sampling
SWMU-172/174
ARI Group Numbers: 24H0259, 24H0338

This memo presents the summary data quality review of 9 primary groundwater samples, one groundwater field duplicate, and two trip blank samples collected between August 13 and 15, 2024. 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 8260D 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
RGW236S-08132024	24H0259-01	all
RGW235I-08132024	24H0259-02	all
RGW172S-08132024	24H0259-03	all
RGW153S-08132024	24H0259-04	all
RGW234S-08132024	24H0259-05	all
RGW226S-08132024	24H0259-06	all
RGW232S-08132024	24H0259-07	all
DUP01-08132024	24H0259-08	all
TB1-08132024	24H0259-09	VOCs
RGW152S-08152024	24H0338-01	all
RGW173S-08152024	24H0338-02	all
TB1-08152024	24H0338-03	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, 2020a and b).

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ARI received the samples on August 13 and 15, 2024. The temperature of the coolers was recorded upon receipt and all coolers 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
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable

   Extra volume was not submitted for analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted at other sites included in this sampling event.

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 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 (%)
RGW172S-08132024/ DUP01-08132024	vinyl chloride	180	136	20	28
	cis-1,2-dichloroethene	585	442	20	28
	trichloroethene	185	139	20	28
	tetrachloroethene	41.7	34.0	20	NC

Abbreviations
ng/L = nanograms per liter RPD = relative percent difference NC = not calculated

7. Reporting Limits and Laboratory Flags – Acceptable

INORGANIC ANALYSES

Samples were analyzed for 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 – Acceptable

   Extra volume was not submitted for analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted at other sites included in this sampling event.

5. Laboratory Duplicates – Acceptable

   The laboratory did not perform duplicate analyses on the samples reviewed in this report.

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. The field duplicate RPDs were within control limits, with the following exception:

The RPD between total lead results was high at 84% between sample RGW172S-08132024 and its field duplicate DUP01-08132024. WSP J qualified the detected total lead results from sample RGW172S-08132024 and its field duplicate DUP01-08132024 due to potential sampling and/or analytical imprecision. (J, FD)

Sample ID/ Field Duplicate ID	Analyte	Primary Result	Duplicate Result	Average Reporting Limit	RPD (%)
RGW172S-08132024/ DUP01-08132024	TOC	106.2 mg/L	97.12 mg/L	0.50 mg/L	8.9
	total arsenic	6.99 µg/L	7.01 µg/L	0.200 µg/L	0.29
	total copper	ND	0.909 µg/L	0.500 µg/L	NC
	total lead	0.172 µg/L	0.423 µg/L	0.100 µg/L	84

Abbreviations:
µg/L = micrograms per liter
mg/L = milligrams per liter
NC = not calculated
RPD = relative percent difference
TOC = total organic carbon
ND = not detected

7. Reporting Limits and Laboratory Flags – Acceptable

OVERALL ASSESSMENT OF DATA

The table below summarizes the data assessment. The completeness of work order numbers 24H0259 and 24H0338 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	Reason for Qualifier	Qualified Result (µg/L)
RGW236S-08132024	None	NA	NA
RGW235I-08132024	None	NA	NA
RGW172S-08132024	Total lead	Field duplicate imprecision	0.172 J
RGW153S-08132024	None	NA	NA
RGW234S-08132024	None	NA	NA
RGW226S-08132024	None	NA	NA
RGW232S-08132024	None	NA	NA
DUP01-08132024	Total lead	Field duplicate imprecision	0.423 J
TB1-08132024	None	NA	NA
RGW152S-08152024	None	NA	NA
RGW173S-08152024	None	NA	NA
TB1-08152024	None	NA	NA

Abbreviation
NA = not applicable
µg/L = micrograms per liter

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), 2020a, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

EPA, 2020b, U.S. EPA National Functional Guidelines for Inorganic Superfund Methods Data Review: EPA 542-R-20-006, November.

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Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 17, 2024		

Subject: Summary Data Quality Review
August 2024 Boeing Renton Groundwater Sampling
Building 4-78/79 SWMU/AOC Group
ARI Work Order Numbers: 24H0288

This memo presents the summary data quality review of 7 primary groundwater samples, one field duplicate, and one trip blank collected on August 14, 2024. 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 8260D;
- Total petroleum hydrocarbons as gasoline (TPH-G) by Ecology Method NWTPH Gx; 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
RGW031S-R-08142024	24H0288-01	all
RGW244S-R-08142024	24H0288-02	all
RGW237S-08142024	24H0288-03	all
RGW240D-08142024	24H0288-04	all
RGW033S-08142024	24H0288-05	all
RGW143S-08142024	24H0288-06	all
RGW034S-08142024	24H0288-07	all
DUP02-08142024	24H0288-08	all
TB2-08142024	24H0288-09	VOCs, 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, 2020a and b).

ARI received the samples on August 14, 2024. The temperature of the cooler was recorded upon receipt and the cooler was above the maximum acceptable temperature of 6 degrees Celsius (°C).

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ORGANIC ANALYSES

Samples were analyzed for VOCs and TPH-G. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable except as noted:

   The temperature of the cooler upon receipt at ARI was above the maximum acceptable temperature, at 7.4°C. The samples were received at the laboratory less than eight hours after sample collection and no data were qualified based on the temperature exceedance.

2. Blanks – Acceptable
3. Surrogates – Acceptable
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 (%)
RGW033S-08142024/ DUP02-08142024	cis-1,2-dichloroethene	0.61	0.79	0.20	26
	benzene	7.27	7.32	0.20	0.69
	TPH-G	202	205	100	1.5

Abbreviations
µg/L = micrograms per liter
NC = not calculated
RPD = relative percent difference
TPH-G = total petroleum hydrocarbons as gasoline

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
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 RPD is acceptable.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg/L)	Reporting Limit (mg/L)	RPD (%)
RGW033S-08142024/ DUP02-08142024	TOC	42.18	40.63	0.50	3.7

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 24H0288 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents identified in the introduction to this report. No problems were identified, and analytical performance was within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte	Reason for Qualifier	Qualified Result (µg/L)
RGW031S-R-08142024	none	NA	none
RGW244S-R-08142024	none	NA	none
RGW237S-08142024	none	NA	none
RGW240D-08142024	none	NA	none
RGW033S-08142024	none	NA	none
RGW143S-08142024	none	NA	none
RGW034S-08142024	none	NA	none
DUP02-08142024	none	NA	none
TB2-08142024	none	NA	none

Abbreviations:
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), 2020a, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

EPA, 2020b, U.S. EPA National Functional Guidelines for Inorganic Superfund Methods Data Review: EPA 542-R-20-006, November.

Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 23, 2024		

Subject: Summary Data Quality Review
August 2024 Boeing Renton Groundwater Sampling
Former Fuel Farm AOC Group
ARI Work Order Number: 24H0339

This memo presents the summary data quality review of three primary groundwater samples collected on August 15, 2024. 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.

The samples and the analyses conducted on the samples are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGW211S-08152024	24H0339-01	all
RGW224S-08152024	24H0339-02	all
RGW221S-08152024	24H0339-03	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, 2020).

ARI received the samples on August 15, 2024. The temperature of the cooler was recorded upon receipt and the cooler was below 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 except as noted:

   TPH-D recovery was extremely low at -12.6% in the MS performed on sample RGW224S-08152024. Additionally, the RPD between MS and MSD results was high at 170%. Because of the extremely low MS and associated surrogate recoveries, acceptable MSD recovery, and the TPH-D detection in the unspiked

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native sample, it is clear that the MS recovery was caused due to laboratory error rather than potential low analytical bias and/or analytical imprecision due to matrix interference. WSP J qualified the TPH-D result from the associated sample due to extremely low MS recovery. (J, LM)

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 review. The completeness of ARI work order numbers 24H0339 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	Reason for Qualifier	Qualified Result (mg/L)
RGW211S-08152024	None	NA	NA
RGW224S-08152024	TPH-D	Extremely low MS recovery	0.686 J
RGW221S-08152024	None	NA	NA

Abbreviations:
mg/L = milligrams 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), 2020a, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

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Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 16, 2024		

Subject: Summary Data Quality Review
August 2024 Boeing Renton Groundwater Sampling
AOC-001, -002, and -003
ARI Work Order Numbers: 24H0238, 24H0260

This memo presents the summary data quality review of 17 primary groundwater samples and 3 trip blank samples collected between August 5 and 13, 2024. 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:

- Benzene (a volatile organic compound) by U.S. Environmental Protection Agency (EPA) Method 8260D;
- Volatile organic compounds (VOCs) (limited suite: vinyl chloride, 1,1-dichloroethene, cis-1,2-dichloroethene, trichloroethene, and/or tetrachloroethene) by U.S. Environmental Protection Agency (EPA) Method 8260D with selected ion monitoring; and/or
- 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
RGW214S-R-08122024	24H0238-01	all
RGW215S-R-08122024	24H0238-02	all
RGW213S-R-08122024	24H0238-03	all
RGW193S-R-08122024	24H0238-04	all
RGW191D-R-08122024	24H0238-05	all
RGW192S-R-08122024	24H0238-06	all
RGW190S-R-08122024	24H0238-07	all
RGW246S-R-08122024	24H0238-08	all
RGW195S-R-08122024	24H0238-09	all
RGW196D-R-08122024	24H0238-10	all
RGW245S-R-08122024	24H0238-11	all
RGW197S-R-08122024	24H0238-12	all
RGW185S-R-08122024	24H0238-13	all
TB-1-08122024	24H0238-14	VOCs
TB-2-08122024	24H0238-15	Benzene
RGW249S-08132024	24H0260-01	VOCs, TOC
RGW188S-08132024	24H0260-02	VOCs, TOC

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Sample ID	Laboratory Sample ID	Requested Analyses
RGW247S-R-08132024	24H0260-03	VOCs, TOC
RGW248I-08132024	24H0260-04	VOCs, TOC
TB3-08132024	24H0260-05	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, 2020a and b).

ARI received the samples between August 12 and 13, 2024. The temperature of the coolers was recorded upon receipt and all of the coolers were below the maximum acceptable temperature of 6 degrees Celsius. According to the cooler receipt form, the sample ID for sample RGW246S-R-20240812 on one of the container labels did not match the ID listed on the COC. ARI logged the sample as RGW246S-R-20240812 per WSP request. According to the attached email correspondence, all samples involved in SDG 24H0238 were incorrectly listed on the COC with sample IDs ending with "-20240812." ARI logged the samples with sample IDs ending with "-08122024" per WSP request.

ORGANIC ANALYSES

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable except as noted:

   Sample RGW213S-R-08122024 was received at the laboratory at a pH greater than 2. ARI adjusted the pH upon receipt and proceeded with analysis. No data were qualified.

   One of the VOA vials for sample RGW195S-R-08122024 contained air bubbles upon laboratory receipt. There were sufficient remaining vials with acceptable preservation and ARI proceeded with analysis. No data were qualified.

2. Blanks – Acceptable
3. Surrogates – Acceptable
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable

   Extra volume was not submitted for analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted 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

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 – Acceptable except as noted:

   TOC recovery was low at -143% in the MS performed on sample RGW214S-R-08122024. TOC was detected in the unspiked native sample at a concentration greater than four times the spike concentration and data usability cannot be assessed based on MS recovery.
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 numbers 24H0238 and 24H0260 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. No problems were identified, and analytical performance was within specified limits.

Sample ID	Qualified Analyte
RGW214S-R-08122024	none
RGW215S-R-08122024	none
RGW213S-R-08122024	none
RGW193S-R-08122024	none
RGW191D-R-08122024	none
RGW192S-R-08122024	none
RGW190S-R-08122024	none
RGW246S-R-08122024	none
RGW195S-R-08122024	none
RGW196D-R-08122024	none
RGW245S-R-08122024	none
RGW197S-R-08122024	none
RGW185S-R-08122024	none
TB-1-08122024	none
TB-2-08122024	none
RGW249S-08132024	none

Sample ID	Qualified Analyte
RGW188S-08132024	none
RGW247S-R-08132024	none
RGW248I-08132024	none
TB3-08132024	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), 2020a, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

EPA, 2020b, U.S. EPA National Functional Guidelines for Inorganic Superfund Methods Data Review: EPA 542-R-20-006, November.

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Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 17, 2024		
Subject:	Summary Data Quality Review August 2024 Boeing Renton Groundwater Sampling AOC-004 ARI Work Order Number: 24H0240		

This memo presents the summary data quality review of one primary groundwater sample collected on August 12, 2024. The sample was submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology. The sample was analyzed for total lead by U.S. Environmental Protection Agency (EPA) Method 6020A.

The sample and the analyses conducted on the sample are listed below.

Sample ID	Laboratory Sample ID	Requested Analyses
RGW250S-08122024	24H0240-01	total lead

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, 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, 2020).

ARI received the sample on August 12, 2024. The temperature of the cooler was recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius. According to the attached email correspondence, the sample involved in SDG 24H0240 was incorrectly listed on the COC with a sample ID ending with "-20240812." ARI logged the sample with a sample ID ending with "-08122024" per WSP request.

INORGANIC ANALYSES

Samples were analyzed for total lead. 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

   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 except as noted:

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ARI J qualified the detected total lead result from sample RGW250S-08122024because the detected result was less than the reporting limit. WSP agrees that the result is quantitatively uncertain and has maintained ARI's J qualifier. (J, DL)

OVERALL ASSESSMENT OF DATA

The table below summarizes the data assessment. The completeness of work order number 24H0240 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	Reason for Qualifier	Qualified Result (µg/L)
RGW250S-08122024	Total lead	Detected result less than the RL	0.0620 J

Abbreviations:
µg/L = micrograms per liter
RL = reporting limit

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.

EPA, 2020b, U.S. EPA National Functional Guidelines for Inorganic Superfund Methods Data Review: EPA 542-R-20-006, November.

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Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 17, 2024		
Subject:	Summary Data Quality Review August 2024 Boeing Renton Groundwater Sampling AOC-060 ARI Work Order Numbers: 24H0340		

This memo presents the summary data quality review of six primary groundwater samples, one field duplicate, and one trip blank sample collected on August 15, 2024. 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 selectively analyzed for the following:

- Volatile organic compounds (VOCs) (cis-1,2-dichloroethene, trichloroethene, and vinyl chloride) by U.S. Environmental Protection Agency (EPA) Method 8260D with selected ion monitoring; 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
RGW253I-08152024	24H0340-01	all
RGW150S-08152024	24H0340-02	all
RGW147S-08152024	24H0340-03	all
RGW009S-08152024	24H0340-04	all
RGW012S-08152024	24H0340-05	all
RGW014S-08152024	24H0340-06	all
DUP03-08152024	24H0340-07	all
TB3-08152024	24H0340-08	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.

Hold 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, 2020a and b).

Samples were received by ARI on August 15, 2024. 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

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2. Blanks – Acceptable
3. Surrogates – Acceptable
4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable

   Extra volume was not submitted for analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted at other sites included in this sampling event.

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 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 (%)
RGW014S-08152024 / DUP04-08152024	vinyl chloride	410	405	20.0	1.2
	cis-1,2-dichloroethene	189	186	20.0	1.6
	trichloroethene	14.4	13.6	20.0	NC

Abbreviations
ng/L = nanograms per liter
NC = not calculated
RPD = relative percent difference

7. Reporting Limits and Laboratory Flags – Acceptable except as noted:

   ARI J qualified the detected trichloroethene results from samples RGW253I-08152024, RGW150S-08152024, RGW014S-08152024, and DUP03-08152024 because the detected results were less than the reporting limit. WSP agrees that these results are quantitatively uncertain and has maintained ARI's J qualifiers. (J, DL)

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 analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted at other sites included in this sampling event.

5. Laboratory Duplicates – Acceptable

   The laboratory did not perform duplicate analyses on the samples reviewed in this report.

6. Field Duplicates – Acceptable

One field duplicate was submitted for TOC 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 field duplicate RPD was within the control limits.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg/L)	Reporting Limit (mg/L)	RPD (%)
RGW014S-08152024 / DUP04-08152024	TOC	26.42	24.80	0.50	6.3

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

A summary of the data assessment is presented in the table below. The completeness of work order numbers 24H0340 is 100 percent. Evaluation of the usefulness of these data is based on the EPA guidance document 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	Reason for Qualifier	Qualified Result (ng/L)
RGW253I-08152024	Trichloroethene	Detected result less than the RL	13.7 J
RGW150S-08152024	Trichloroethene	Detected result less than the RL	10.6 J
RGW147S-08152024	none	NA	NA
RGW009S-08152024	none	NA	NA
RGW012S-08152024	none	NA	NA
RGW014S-08152024	Trichloroethene	Detected result less than the RL	14.4 J
DUP03-08152024	Trichloroethene	Detected result less than the RL	13.6 J
TB3-08152024	none	NA	NA

Abbreviations:
NA = not applicable
ng/L = nanograms per liter
RL = reporting limit

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), 2020a, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

EPA, 2020b, U.S. EPA National Functional Guidelines for Inorganic Superfund Methods Data Review: EPA 542-R-20-006, November.

Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Tel:	(503) 207-9629		
Date:	September 17, 2024		
Subject:	Summary Data Quality Review August 2024 Boeing Renton Groundwater Sampling AOC-090 ARI Work Order Number: 24H0359		

This memo summarizes the data quality review of five primary groundwater samples and one trip blank sample collected on August 13 and 14, 2024. 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 selectively analyzed for the following:

- Volatile organic compounds (VOCs) (acetone, methylene chloride, trans-1,2-dichlorethene, cis-1,2-dichloroethene, chloroform, carbon tetrachloride, benzene, toluene, and 1,1,2-trichloroethane) by U.S. Environmental Protection Agency (EPA) Method 8260D);
- VOCs (vinyl chloride, 1,1-dichloroethene, trichloroethene, tetrachloroethene, and/or 1,1,2,2-tetrachloroethane) by EPA Method 8260D with selected ion monitoring (SIM);
- Total petroleum hydrocarbons in the gasoline range (TPH-G) by Ecology Method NWTPH Gx;
- Total petroleum hydrocarbons in the diesel and motor oil ranges (TPH-D and TPH-MO) by Ecology Method NWTPH-Dx (with silica gel cleanup); 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
RGW-176S-08142024	24H0359-01	vinyl chloride
RGW178S-08142024	24H0359-02	vinyl chloride
RGW189S-08142024	24H0359-03	VOCs, TOC, TPH-G, TPH-D, TPH-MO, TOC
RGW-207S-08142024	24H0359-04	vinyl chloride
RGW-208S-08142024	24H0359-05	vinyl chloride
TB1-08142024	24H0359-06	VOCs, TOC

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan Addendum (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), laboratory 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, 2020a and b).

ARI received the samples on August 14, 2024. The temperature of the cooler was recorded upon receipt and was above the maximum acceptable temperature of 6 degrees Celsius (°C).

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ORGANIC ANALYSES

Samples were analyzed for VOCs and TPH. Laboratory data were evaluated for the following parameters:

1. Preservation and Holding Times – Acceptable except as noted:

   The temperature of the cooler upon receipt at ARI was above the maximum acceptable temperature, at 7.4°C. The samples were received at the laboratory less than eight hours after sample collection and no data were qualified based on the temperature exceedance.

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
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 completeness of ARI work order number 24B0240 is 100 percent. Evaluation of the usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. No problems were identified, and analytical performance was within specified limits. The data meet the project's data quality objectives.

A summary of the data quality review is presented in the table below.

Sample ID	Qualified Analyte	Qualifier Reason	Qualified Result
RGW-176S-08142024	None	NA	NA
RGW178S-08142024	None	NA	NA
RGW189S-08142024	None	NA	NA

Sample ID	Qualified Analyte	Qualifier Reason	Qualified Result
RGW-207S-08142024	None	NA	NA
RGW-208S-08142024	None	NA	NA
TB1-08142024	None	NA	NA

Abbreviations:
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), 2020a, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

EPA, 2020b, U.S. EPA National Functional Guidelines for Inorganic Superfund Methods Data Review: EPA 542-R-20-006, November.

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Memo

To:	Patrick McCarthy, Project Manager	Project:	PS24206850.03
From:	Caitlin Riechmann	c:	Project File
Date:	October 2, 2024		
Tel:	(503) 207-9629		
Subject:	Summary Data Quality Review August 2024 Boeing Renton Groundwater Sampling Apron A ARI Work Order Number: 24H0389		

This memo presents the summary data quality review of one primary groundwater sample and one trip blank sample collected on August 15, 2024. 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 8260D; 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
RGW264-08152024	24H0389-01	all
TB2-08152024	24H0389-02	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, 2020a and b).

ARI received the samples on August 15, 2024. The temperature of the coolers was recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius (°C). According to the cooler receipt form, the sample IDs for all samples reviewed in this report were mislabeled on the COC. ARI logged the samples per the container labels 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
4. LCS/LCSD – Acceptable

WSP USA Environment & Infrastructure Inc.
18300 Redmond Way, Ste 200
Redmond, WA 98052
+1 (425) 883-0777
wsp.com

5. MS/MSD – Acceptable

   Extra volume was not submitted for analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted 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.

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 analysis of MS/MSD samples. The project frequency requirement was achieved with MS/MSD analysis conducted at other sites included in this sampling event.

5. Laboratory Duplicates – Acceptable

The laboratory did not perform duplicate analyses on the samples reviewed in this report.

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 24H0389 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. No problems were identified, and analytical performance was within specified limits. The data meet the project's data quality objectives.

RGW264-08152024	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), 2020a, U.S. EPA National Functional Guidelines for Organic Superfund Methods Data Review: EPA 540-R-20-005, November.

EPA, 2020b, U.S. EPA National Functional Guidelines for Inorganic Superfund Methods Data Review: EPA 542-R-20-006, November.

APPENDIX D

HISTORICAL GROUNDWATER DATA TABLES

TABLE D-1: SWMU-168 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID[3] CPOC Area GW229S							
		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

Analyte	Current Cleanup Level[4]	Well ID[3] CPOC Area GW230I							
		2/15/2021	8/10/2021	2/21/2022	8/17/2022	2/9/2023	8/24/2023	2/6/2024	8/13/2024
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	0.11	0.076	**0.359 J**	**0.164**	**0.539 J**	**0.146**	0.101	0.087	0.0784

Analyte	Current Cleanup Level[4]	Well ID[3] CPOC Area 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
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	0.11	0.020 U	0.020 U	0.020 U	0.039	0.033	0.033	0.026	0.020 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:

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								
		2/15/2021	8/10/2021	2/21/2022	2/21/2022	8/24/2022	2/8/2023	8/15/2023	2/5/2024	8/15/2024	8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/8/2023	8/15/2023	2/2/2024	8/13/2024
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	**0.144**	**1.330**	**1.57**	**1.59**	**0.877**	**3.16 J**	**1.46**	**4.59**	**1.41**	**0.0551**	**0.077**	**0.0582 J**	**0.0517**	**0.100**	**0.0569 J**	**0.053**	**0.068**	**0.0574**
Tetrachloroethene	0.02	**0.081**	**0.0872**	**1.84**	**1.71**	**1.05**	**0.234 J**	**1.06**	**0.238**	**0.848**	0.020 U	0.020 U	0.020 UJ	0.0200 U	0.0200 U	0.0200 UJ	0.0161 J	**0.198**	0.0200 U
Trichloroethene	0.02	0.020 U	**0.129**	**0.522**	**0.497**	**0.534**	**0.101 J**	**0.412**	**0.104**	**0.303**	0.020 U	0.020 U	0.020 UJ	0.0200 U	**0.0525**	0.0200 UJ	0.0172 J	**0.049**	0.0200 U
Vinyl Chloride	0.11	0.0378	**0.506**	**0.200**	**0.219**	**0.346**	**0.195 J**	**0.209**	**0.264**	**0.152**	**0.135**	**0.220**	**0.193 J**	**0.174**	**0.214**	**0.148 J**	0.0881	0.108	**0.153**
Total Metals (µg/L)																			
Arsenic	8.0	**7.67**	**16.3**	2.88	2.34	**47.7**	6.92	**39.8**	7.95	**62.4**	**4.05**	**32.8**	**5.47**	**4.98**	**2.85**	**4.76**	**2.39**	4.12	4.11
Copper	3.5	**17.2 J**	**9.08 J**	**5.07**	**3.88**	**9.17**	**6.61**	**4.98 J**	2.44	**131**	1.68	**33.90**	2.37	1.45	0.641	1.14	0.408 J	1.00 U	1.11
Lead	1.0	**12.5 J**	**5.38 J**	**2.78 J**	**1.90 J**	**5.75**	**4.24 J**	**32.2**	**1.18**	**74.4**	0.326	**5.8**	0.448	0.302	0.123	0.256	0.200 U	0.232	0.271

Analyte	Current Cleanup Level[4]	Well ID[3] Downgradient Plume Area																	
		GW172S									GW173S								
		8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/8/2023	8/16/2023	2/5/2024	8/13/2024	8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/8/2023	8/17/2023	2/5/2024	8/15/2024
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	**0.0561**	**0.108**	**0.0746**	**0.0532**	**0.0436**	**0.155 J**	**0.528**	**0.877**	**0.585**	**0.0313**	**0.0505**	**0.0424 J**	0.0280	**0.168**	**0.0909 J**	**0.107**	**0.145**	**0.226**
Tetrachloroethene	0.02	**0.0603**	**0.0624**	0.020 U	**0.0677**	0.0200 U	0.0200 UJ	**0.0237**	0.0200 U	**0.0417**	0.020 U	0.020 U	0.020 UJ	0.0200 U	0.0200 U	**0.0429 J**	0.0102 J	**0.0543**	**0.0257**
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	**0.0201**	0.0200 U	0.0200 UJ	**0.199**	**0.266**	**0.185**	**0.0239**	0.020 U	0.020 UJ	0.0200 U	**0.0496**	**0.0479 J**	**0.0262**	**0.0307**	**0.0706**
Vinyl Chloride	0.11	0.0628	**0.219**	**0.155**	**0.137**	0.0887	**0.601 J**	**0.277**	**0.907**	**0.180**	0.0455	**0.183**	**0.176 J**	0.0696	**0.175**	**0.210 J**	**0.132**	**0.280**	**0.214**
Total Metals (µg/L)																			
Arsenic	8.0	**10.8**	**10.8**	7.18	**11.2**	4.86	6.64	**23.6**	6.68	6.99	7.00	**9.94**	**11.4**	**13.8**	6.04	5.69	7.26	**9.51**	5.81
Copper	3.5	**6.12**	**3.89**	2.86	2.86	1.52	**6.17**	**17.70**	1.08	0.500 U	3.19	3.11	**5.96**	2.58	1.54	2.98	1.09	3.07	1.00 U
Lead	1.0	**2.58**	**1.98**	**1.33**	**1.37**	**1.32**	**3.80**	**14.7 J**	0.714	0.172 J	0.470	0.850	**1.65**	0.788	0.468	0.752	0.384	**1.41**	0.302

Analyte	Current Cleanup Level[4]	Well ID[3] Downgradient Plume Area									CPOC Area								
		GW226S									GW232S								
		8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/8/2023	8/16/2023	2/2/2024	8/13/2024	8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/8/2023	8/16/2023	2/5/2024	8/13/2024
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	0.0218	0.020 U	**0.0335 J**	**0.0363**	0.0255	**0.0431 J**	0.0169 J	**0.0465**	0.0232	**0.482**	**0.219**	**0.464 J**	**0.197**	**0.325**	**0.206 J**	**0.236**	**0.167**	**0.238**
Tetrachloroethene	0.02	**0.0279**	0.020 U	**0.0202 J**	0.0200 U	0.0200 U	0.0200 UJ	0.0200 U	0.0200 U	**0.0248**	0.020 U	0.020 U	0.020 UJ	0.0200 U	0.0200 U	0.0200 UJ	0.0200 U	0.0200 U	0.0200 U
Trichloroethene	0.02	0.020 U	0.020 U	0.020 UJ	0.0200 U	0.0200 U	0.0200 UJ	0.00910 J	0.0200 U	0.0200 U	0.020 U	0.020 U	0.020 UJ	0.0200 U	0.0200 U	0.0200 UJ	0.0129 J	0.0200 U	0.0200 U
Vinyl Chloride	0.11	0.0415	0.0519	0.0516 J	0.0414	**0.128**	0.0734 J	0.0886	0.0394	0.0923	**0.425**	**0.263**	**0.653 J**	**0.307**	**0.558**	**0.290 J**	**0.348**	**0.187**	**0.256**
Total Metals (µg/L)																			
Arsenic	8.0	4.93	**8.12**	5.57	7.33	3.09	4.28	5.22	**9.01**	6.74	3.83	4.78	6.19	3.75	3.83	3.51	6.16	2.19	6.92
Copper	3.5	1.48	**3.92**	1.48	2.40	0.500 U	0.500 U	1.31 J	**6.69**	2.17	0.627	2.09	1.79	1.09	0.500 U	0.915	1.26 J	1.00 U	2.04
Lead	1.0	0.136	0.513	0.124	0.237	0.100 U	0.100 U	0.500 U	0.95	0.324	0.100 U	0.318	0.262	0.234	0.122	0.124	0.285 J	0.200 U	0.680

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																	
		GW234S									GW235I								
		8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/9/2023	8/16/2023	2/2/2024	8/13/2024	8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/9/2023	8/16/2023	2/2/2024	8/13/2024
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.03	**0.0914**	0.020 U	**0.0892**	**0.0591**	**0.134**	**0.0581 J**	**0.103**	**0.0495**	**0.114**	**0.104**	**0.128**	**0.179**	**0.175**	**0.227**	**0.235 J**	**0.225**	**0.229**	**0.240**
Tetrachloroethene	0.02	0.020 U	0.020 U	0.020 U	0.0200 U	0.0200 U	0.0200 UJ	0.0200 U	0.0200 U	0.0200 U	0.020 U	**0.0292**	0.020 U	0.0200 U	0.0200 U	0.0200 UJ	0.0200 U	0.0200 U	0.0200 U
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.0200 U	0.0200 U	0.0200 UJ	0.0163 J	0.0200 U	0.0200 U	**0.0227**	0.020 U	**0.0285**	**0.0253**	**0.0250**	**0.0296 J**	0.0189 J	**0.0207**	0.0200 U
Vinyl Chloride	0.11	0.0279	0.020 U	0.0497	0.0318	**0.170**	0.0304 J	0.0726	0.0200 U	0.0981	0.020 U	0.020 U	**0.24**	0.0259	0.0280	0.0310 J	0.0313	0.0215	0.0258
Total Metals (µg/L)																			
Arsenic	8.0	3.26	6.29	1.18	1.76	0.974	5.90	0.93	0.626	1.05	0.288	0.200 U	0.200 U	0.200 U	0.200 U	0.283	0.318 J	0.400 U	0.200 U
Copper	3.5	3.21	**11.4**	2.58	2.13	2.31	**16.6**	1.3	2.26	0.639	1.30	0.727	0.689	0.687	0.500 U	1.23	0.676 J	1.00 U	0.500 U
Lead	1.0	**1.25**	**4.13**	**1.01**	0.930	0.830	**6.75**	0.27	0.876	0.256	0.304	0.174	0.179	0.159	0.100 U	0.332	0.224	0.200 U	0.100 U

Analyte	Current Cleanup Level [4]	Well ID [3] CPOC Area								
		GW236S								
		8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/9/2023	8/17/2023	2/5/2024	8/13/2024
Volatile Organic Compounds (µg/L)										
cis-1,2-Dichloroethene	0.03	**0.0881**	0.020 U	**0.0791**	0.0200 U	**0.0572**	**0.0364 J**	**0.0473**	0.020 U	**0.0523**
Tetrachloroethene	0.02	0.020 U	0.020 U	0.020 U	**0.0206**	0.0200 U	0.0200 UJ	0.0200 U	**0.0262**	0.0200 U
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.0200 U	0.0200 U	0.0200 UJ	0.0187 J	0.0200 U	0.0200 U
Vinyl Chloride	0.11	0.020 U	0.020 U	0.0223	0.0200 U	0.0200 U	0.0200 UJ	0.0128 J	0.0200 U	0.0200 U
Total Metals (µg/L)										
Arsenic	8.0	**10.1**	2.89	5.49	1.97	0.995	1.64	1.55	1.00 U	4.17
Copper	3.5	**10.8**	**9.70**	2.47	**5.27**	1.22	2.07	1.00 U	2.50 U	1.63
Lead	1.0	**10.8**	**6.31**	**1.79**	**3.32**	0.798	**1.38**	0.160 J	0.795	**1.29**

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								
		5/11/2020	8/11/2020	2/15/2021	8/11/2021	8/23/2022	2/7/2023	8/22/2023	2/6/2024	8/14/2024	2/16/2021	8/11/2021	2/22/2022	2/22/2022	8/17/2022	2/7/2023	8/18/2023	2/6/2024	8/14/2024
Volatile Organic Compounds (µg/L)																			
Benzene	0.80	**17.6**	**1.72 J**	**18.8 J**	**1.08**	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	**11.0**	**14.5**	**8.41**	**8.57**	**14.2 J**	0.20 U	**8.85**	**6.49**	**7.27**
cis-1,2-Dichloroethene	0.70	0.40 J	0.67 J	0.31 J	0.20 U	0.26	0.18 J	0.200 U	0.200 U	0.200 U	**1.64**	0.55	**3.82**	**4.04**	0.45 J	0.09 J	0.42	0.480	0.610
Trichloroethene	0.23	0.20 U	0.20 UJ	0.20 UJ	0.20 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U
Vinyl Chloride	0.20	0.20 U	**0.32 J**	0.20 UJ	0.20 U	**0.39**	**0.26**	**0.28**	**0.230**	**0.290**	**5.31**	**2.31**	**8.90**	**9.28**	**1.53 J**	**0.24**	**0.94**	**0.830**	0.200 U
Total Petroleum Hydrocarbons (µg/L)																			
TPH-G (C7-C12)	800	**1,880**	**1,160**	**2,340**	**1,540**	100 U	100 U	100 U	100 U	100.0 U	323	360	168	166	300 J	100 U	223	141	202

Analyte	Current Cleanup Level[4]	Well ID[3] Source Area																	
		GW034S									GW244S								
		8/11/2020	2/15/2021	8/11/2021	2/22/2022	8/17/2022	2/8/2023	8/18/2023	2/6/2024	8/14/2024	5/11/2020	8/11/2020	2/15/2021	8/11/2021	8/23/2022	2/7/2023	8/22/2023	1/30/2024	8/14/2024
Volatile Organic Compounds (µg/L)																			
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.200 U	**1.47**	**9.62**	0.200 U	0.200 U	0.200 U	0.46	0.43	0.46	0.20 U	0.25	0.12 J	0.200 U	0.200 U	0.200 U
cis-1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U	0.200 U	**2.03**	**0.74**	0.110 J	0.200 U	0.200 U	**1.06**	**1.12**	0.68	0.22	0.25	0.25	0.22	0.340	0.520
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	0.20 U	0.20 U	**0.29**	0.20 U	0.20 U	0.20 U	0.200 U	0.200 U	**0.330**
Vinyl Chloride	0.20	**0.41**	**0.25**	**1.20**	**0.330**	**1.45**	**4.12**	**0.47**	**0.260**	0.200 U	**0.85**	**0.98**	**0.64**	**0.37**	**0.46**	**0.55**	**0.28**	**0.610**	**0.330**
Total Petroleum Hydrocarbons (µg/L)																			
TPH-G (C7-C12)	800	100 U	100 U	100 U	100 U	100 U	350	100 U	100 U	100.0 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100.0 U

Analyte	Current Cleanup Level[4]	Well ID[3] CPOC Area																	
		GW143S									GW237S								
		8/11/2020	2/15/2021	8/11/2021	2/22/2022	8/17/2022	2/7/2023	8/18/2023	2/5/2024	8/14/2024	8/11/2020	2/16/2021	8/11/2021	2/22/2022	8/17/2022	2/6/2023	8/18/2023	2/5/2024	8/14/2024
Volatile Organic Compounds (µg/L)																			
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	0.24	**6.79 J**	0.20 U	**3.73**	0.20 U	**4.18**	0.150 J	**6.47**	0.200 U
cis-1,2-Dichloroethene	0.70	**1.17**	0.26	0.65	0.430	**0.76 J**	0.36	0.30	0.280	**0.980**	0.20 U	0.20 UJ	0.20 U	0.200 U	0.20 U	0.22	0.0900 J	0.200 U	0.200 U
Trichloroethene	0.23	0.23	0.20 U	0.20 U	0.200 U	**0.53 J**	0.10 J	0.200 U	0.200 U	0.200 U	0.20 U	0.20 UJ	0.20 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.200 U	0.20 U	0.09 J	0.120 J	0.200 U	0.200 U	0.20 U	**0.31 J**	0.20	0.200 U	0.20 U	**0.26**	**0.25**	**0.290**	**0.210**
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	100.0 U	100 U	100 UJ	360	664	100 U	**805**	100 U	**915**	100.0 U

Analyte	Current Cleanup Level[4]	Well ID[3] CPOC Area								
		GW240D								
		8/11/2020	2/15/2021	8/11/2021	2/22/2022	8/17/2022	2/7/2023	8/18/2023	2/5/2024	8/14/2024
Volatile Organic Compounds (µg/L)										
Benzene	0.80	0.20 U	0.20 U	0.20 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U
cis-1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.200 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.200 U	0.20 U	0.13 J	0.150 J	0.200 U	0.200 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	100.0 U

Notes
1. Data qualifiers are as follows:
   U = The analyte was not detected at the reporting limit indicated.
   UJ = The result is estimated and 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; 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]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[3]	Well ID[2] CPOC Area																	
		GW211S									GW221S								
		8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/19/2022	2/9/2023	8/15/2023	2/8/2024	8/15/2024	8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/19/2022	2/9/2023	8/15/2023	2/6/2024	8/15/2024
Total Petroleum Hydrocarbons (mg/L)																			
TPH-D (C12-C24)	0.5	0.192	0.284	0.140	1.00 U	0.100 U	0.100 U	0.100 U	0.100 U	**0.548**	**7.67**	**1.22**	**1.02**	**0.575**	**0.940**	**1.75**	0.258	**3.57**	**0.974**
TPH-O (C24-C38)	NE	0.200 U	0.225 U	0.200 U	2.00 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.215 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Jet A	0.5	0.155	0.262	0.100 U	1.00 U	0.100 U	0.100 U	0.100 U	0.100 U	0.408	**5.70**	**0.89**	**0.718**	0.460	**0.562**	**1.20**	0.229	**2.65**	**0.637**

Analyte	Current Cleanup Level[3]	Well ID[2] CPOC Area								
		GW224S								
		2/15/2021	8/10/2021	2/21/2022	2/21/2022	8/19/2022	2/9/2023	8/15/2023	2/6/2024	8/15/2024
Total Petroleum Hydrocarbons (mg/L)										
TPH-D (C12-C24)	0.5	**0.584**	**1.08**	**0.682**	**1.01**	**0.881**	**1.15**	**0.526 J**	**0.764**	**0.686 J**
TPH-O (C24-C38)	NE	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.324	0.200 U	0.200 U
Jet A	0.5	**1.04**	**1.47**	**1.04**	**1.76**	**1.25**	**1.61**	**0.913 J**	**1.27**	**0.943**

Notes

1. **Bolded** values exceed the cleanup levels.
2. S = shallow well.
3. 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
NE = not established
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								
		8/10/2020	2/16/2021	8/12/2021	2/23/2022	8/24/2022	2/6/2023	8/22/2023	2/1/2024	8/13/2024	8/10/2020	2/16/2021	8/12/2021	2/22/2022	8/23/2022	2/6/2023	8/23/2023	2/2/2024	8/13/2024
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.78	NA	NA	NA	NA	NA	NA	0.0529	0.0576	0.0566	NA	NA	NA	NA	NA	NA	0.0408	0.0315	0.0293
Tetrachloroethene	0.02	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U
Trichloroethene	0.16	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U
Vinyl Chloride	0.24	**0.261**	**0.366**	**0.517**	**0.359 J**	**0.404 J**	0.217	**0.263**	0.214	**0.291**	**0.288**	0.107	**0.698**	0.141 J	**0.404**	0.104	0.197	0.207	0.229

Analyte	Current Cleanup Level[4]	Well ID[3]																	
		CPOC Area																	
		GW247S									GW248I								
		8/10/2020	2/16/2021	8/11/2021	2/23/2022	8/23/2022	2/6/2023	8/22/2023	2/2/2024	8/13/2024	8/10/2020	2/16/2021	8/11/2021	2/23/2022	8/23/2022	2/6/2023	8/22/2023	2/2/2024	8/13/2024
Volatile Organic Compounds (µg/L)																			
cis-1,2-Dichloroethene	0.78	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U	NA	NA	NA	NA	NA	NA	0.0219	0.0207	0.0200 U
Tetrachloroethene	0.02	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U
Trichloroethene	0.16	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U	NA	NA	NA	NA	NA	NA	0.0200 U	0.0200 U	0.0200 U
Vinyl Chloride	0.24	**0.392**	**0.405**	**0.678**	0.127 J	**0.379**	NA	**0.715**	**0.467**	**0.581**	**0.383**	**0.426**	**0.711**	**0.598 J**	**0.742**	**0.588**	**0.482**	**0.383**	**0.458**

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
NA = not analyzed
SWMU = solid waste management unit

TABLE D-6: AOC-004 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN [1]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[3]	Well ID[2] / Source Area / GW250S										
		8/14/2019	3/9/2020	8/12/2020	2/16/2021	8/12/2021	2/22/2022	8/23/2022	2/7/2023	8/14/2023	2/6/2024	8/12/2024
Metals (mg/L)												
Lead	0.001	0.000714	**0.00119**	0.000611	0.000564	0.000663	0.000588	**0.00131**	0.000820	**0.0570 J**	0.000112	0.000062 J

Notes

1. **Bolded** values exceed the cleanup levels.
2. S = shallow well.
3. 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

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								
		8/11/2020	2/17/2021	8/11/2021	2/22/2022	8/19/2022	2/6/2023	8/18/2023	2/7/2024	8/15/2024
Volatile Organic Compounds (µg/L)										
cis -1,2-Dichloroethene	0.08	**0.124**	**0.139**	**0.368**	**0.15**	**0.229**	**0.231**	**0.157**	**0.165**	**0.170**
Trichloroethene	0.02	**0.0324**	**0.0294**	**0.0316**	**0.0284**	**0.0288**	**0.0409**	**0.0292**	**0.0336**	**0.0346**
Vinyl Chloride	0.26	0.219	**0.300**	0.160	**0.434**	**0.570**	**0.550**	**0.371**	**0.353**	**0.439**

Analyte	Current Cleanup Levels[4]	Well ID[3]								
		Downgradient Plume Area								
		GW012S								
		8/11/2020	2/17/2021	8/11/2021	2/22/2022	8/18/2022	2/6/2023	8/17/2023	2/7/2024	8/15/2024
Volatile Organic Compounds (µg/L)										
cis -1,2-Dichloroethene	0.08	**0.508**	**1.260**	**2.210**	**0.693**	**1.91 J**	**2.78**	**2.46**	**1.45**	**1.83**
Trichloroethene	0.02	**0.0518**	**0.0454**	**0.0908**	**0.0506**	**1.02 J**	**0.208**	**1.61**	**0.143**	**0.0990**
Vinyl Chloride	0.26	**0.387**	0.180	**0.795**	**1.57**	**0.294 J**	**0.881**	**0.625**	**0.632**	**0.936**

Analyte	Current Cleanup Levels[4]	Well ID[3]								
		Downgradient Plume Area								
		GW014S								
		8/11/2020	2/17/2021	8/11/2021	2/22/2022	8/18/2022	2/6/2023	8/17/2023	2/7/2024	8/15/2024
Volatile Organic Compounds (µg/L)										
cis -1,2-Dichloroethene	0.08	**0.0932**	**0.130**	**0.147**	**0.133**	**0.134 J**	**0.137**	**0.179**	**0.207**	**0.189**
Trichloroethene	0.02	0.020 U	**0.035**	**0.0227**	0.020 U	**0.0246 J**	0.0200 U	0.0158 J	**0.0247**	0.0144 J
Vinyl Chloride	0.26	0.190	0.207	**0.367**	**0.276**	**0.514 J**	0.231	**0.551**	**0.380**	**0.410**

Analyte	Current Cleanup Levels[4]	Well ID[3]								
		Downgradient Plume Area								
		GW147S								
		8/11/2020	2/17/2021	8/11/2021	2/22/2022	8/19/2022	2/6/2023	8/17/2023	2/7/2024	8/15/2024
Volatile Organic Compounds (µg/L)										
cis -1,2-Dichloroethene	0.08	**0.931**	**0.180**	**0.180**	**0.679**	**8.37**	**0.766**	**4.46**	**0.442**	**5.10**
Trichloroethene	0.02	**3.37**	**0.498**	**0.498**	**0.425**	**0.937**	**0.376**	**2.76**	**0.0802**	**2.76**
Vinyl Chloride	0.26	0.0643	0.020 U	0.020 U	0.0623	**3.39**	0.0215	**0.928**	0.0638	**1.61**

Analyte	Current Cleanup Levels[4]	Well ID[3]								
		CPOC Area								
		GW150S								
		8/11/2020	2/17/2021	8/11/2021	2/22/2022	8/22/2022	2/6/2023	8/17/2023	2/7/2024	8/15/2024
Volatile Organic Compounds (µg/L)										
cis -1,2-Dichloroethene	0.08	**0.0935**	0.0393	**0.0991**	0.0547	**0.126**	**0.0849**	**0.0901**	0.0509	**0.105**
Trichloroethene	0.02	**0.0291**	0.020 U	0.020 U	0.020 U	**0.0212**	0.0200 U	0.0115 J	0.0200 U	0.0106 J
Vinyl Chloride	0.26	0.0619	0.0455	0.122	0.0969	0.100	0.138	0.15	0.0608	0.165

Analyte	Current Cleanup Levels[4]	Well ID[3]								
		CPOC Area								
		GW253I								
		8/11/2020	2/17/2021	8/11/2021	2/22/2022	8/22/2022	2/6/2023	8/17/2023	2/7/2024	8/15/2024
Volatile Organic Compounds (µg/L)										
cis -1,2-Dichloroethene	0.08	**0.0879**	**0.140**	**0.106**	**0.0846**	**0.138**	**0.0991**	**0.0997**	**0.0929**	**0.0934**
Trichloroethene	0.02	**0.0211**	**0.0272**	**0.0202**	0.020 U	**0.0205**	0.0200 U	0.0147 J	0.0145 J	0.0137 J
Vinyl Chloride	0.26	0.100	0.243	0.146	0.177	0.255	0.156	0.17	0.133	0.146

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-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]									GW176S								
		8/12/2020	2/17/2021	8/12/2021	2/23/2022	8/24/2022	2/7/2023	8/24/2023	2/8/2024	8/14/2024	8/12/2020	2/17/2021	8/17/2021	2/23/2022	8/23/2022	2/7/2023	8/24/2023	2/8/2024	8/14/2024
Volatile Organic Compounds (µg/L)																			
1,1,2,2-Tetrachloroethane	0.17	0.020 U	0.020 U	0.020 U	0.24 U	0.158	0.153	0.153	**0.158**	**0.181**	NM	NM	NM	NM	NM	NM	NA	NA	NA
1,1,2-Trichloroethane	0.2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	0.200 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
1,1-Dichloroethene	0.057	0.0529	0.020 U	0.020 U	0.0200 U	0.0432	0.0200 U	0.0322	0.0200 U	0.0338	NM	NM	NM	NM	NM	NM	NA	NA	NA
Acetone	300	5.00 U	10.6 J	5.00 U	5.00 U	6.28	5.00 U	5.00 U	5.00 U	5.00 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Benzene	0.8	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	0.200 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Carbon Tetrachloride	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	0.200 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Chloroform	2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.200 U	0.200 U	0.200 U	0.200 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
cis-1,2-Dichloroethene	2.4	1.93	0.47	**3.15**	0.20 U	1.78	0.230	1.7	0.200 U	1.15	NM	NM	NM	NM	NM	NM	NA	NA	NA
Methylene Chloride	2	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Tetrachloroethene	0.05	0.020 U	0.0283	0.020 U	0.0200 U	0.0206	0.200 U	**17.2 J**	0.0200 U	0.0200 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Toluene	75	1.05	5.21	2.42	0.47 J	43.7	0.690 J	0.200 U	0.200 U	1.34	NM	NM	NM	NM	NM	NM	NA	NA	NA
trans-1,2-Dichloroethene	53.9	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.200 U	0.0200 U	0.200 U	0.200 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Trichloroethene	0.08	**0.324**	**0.143**	**0.386**	0.0505 UJ	**0.43**	0.0593	**0.511**	0.0200 U	**0.109**	NM	NM	NM	NM	NM	NM	NA	NA	NA
Vinyl Chloride	0.13	**0.369**	0.0405	**0.575**	0.0867 J	**0.460**	0.0230	**0.438**	0.0200 U	0.121	**0.232**	**0.138**	**0.431**	**0.311 J**	**0.364**	**0.349**	**0.314**	**0.21**	**0.287**
Total Petroleum Hydrocarbons (µg/L)																			
TPH-G (C7-C12)	800	699	507	504	370 J	555	246	288	100 U	470	NM	NM	NM	NM	NM	NM	NA	NA	NA
TPH-D (C12-C24)	500	150	**2160**	390	192 J	**521**	**648 J**	100.0 U	100 U	427	NM	NM	NM	NM	NM	NM	NA	NA	NA
TPH-O (C24-C40)	500	379	**3990**	**689**	263 J	**586**	**1,120**	211	200 U	**838**	NM	NM	NM	NM	NM	NM	NA	NA	NA

Analyte	Current Cleanup Levels[4]	Well ID[3]																									
		Shallow Zone CPOC Area																									
		GW178S									GW207S								GW208S								
		8/12/2020	2/17/2021	8/12/2021	2/23/2022	8/24/2022	2/7/2023	8/24/2023	2/8/2024	8/14/2024	2/17/2021	8/12/2021	2/23/2022	8/23/2022	2/7/2023	8/24/2023	2/8/2024	8/14/2024	3/11/2020	8/12/2020	2/17/2021	8/12/2021	2/23/2022	8/24/2022	2/7/2023	8/24/2023	2/8/2024	8/14/2024
Volatile Organic Compounds (µg/L)																											
1,1,2,2-Tetrachloroethane	0.17	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.020 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
1,1,2-Trichloroethane	0.2	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.20 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
1,1-Dichloroethene	0.057	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.020 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Acetone	300	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	5.0 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Benzene	0.8	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.20 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Carbon Tetrachloride	0.23	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.20 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Chloroform	2	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.20 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
cis-1,2-Dichloroethene	2.4	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.20 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Methylene Chloride	2	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	1.0 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Tetrachloroethene	0.05	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.020 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Toluene	75	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.20 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
trans-1,2-Dichloroethene	53.9	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.20 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Trichloroethene	0.08	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	0.020 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
Vinyl Chloride	0.13	**0.141**	**0.224**	**0.182**	**0.361 J**	**0.390**	**0.531**	**0.343**	**0.27**	**0.395**	0.066	**0.232**	**0.356 J**	**0.326**	0.0200 U	**0.293**	0.111	**0.313**	**0.419**	**0.343**	**0.349**	**0.313**	**0.404 J**	**0.400**	**0.419**	**0.242**	**0.298**	**0.359**
Total Petroleum Hydrocarbons (µg/L)																											
TPH-G (C7-C12)	800	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	100 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
TPH-D (C12-C24)	500	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	100 U	NM	NM	NM	NM	NM	NM	NA	NA	NA
TPH-O (C24-C40)	500	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NA	NA	NA	200 U	NM	NM	NM	NM	NM	NM	NA	NA	NA

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.
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
NM = Analyte not measured
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

TABLE D-9: APRON A HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1]

Boeing Renton Facility, Renton, Washington

Analyte	Well ID[2] GW264S								
	8/10/2020	2/15/2021	8/10/2021	2/21/2022	8/24/2022	2/8/2023	8/14/2023	2/7/2024	8/15/2024
Volatile Organic Compounds (µg/L)									
cis-1,2-Dichloroethene	0.52	0.20 U	0.20 U	0.200 U	0.200 U	2.00 U	2.00 U	0.200 U	0.200 U
Vinyl Chloride	0.20 U	1.49	1.37	2.54	1.41	2.00 U	2.00 U	0.810	0.480

Notes:

1. Data qualifiers are as follows:

U = The analyte was not detected at the reporting limit indicated.

2. S = shallow well

Abbreviations:

µg/L = micrograms per liter

TABLE D-10: AOC-001,-002 HISTORICAL CONCENTRATIONS OF CONSTITUENTS OF CONCERN[1, 2]

Boeing Renton Facility, Renton, Washington

Analyte	Current Cleanup Level[4]	Well ID [3]							
		AOC-001 / AOC-002 Source Area		AOC-001 / AOC-002 Cross-Gradient Wells					
		GW193S-R		GW213S-R		GW214S-R		GW215S-R	
		2/1/2024	8/12/2024	2/1/2024	8/12/2024	2/1/2024	8/12/2024	2/1/2024	8/12/2024
Volatile Organic Compounds (µg/L)									
Benzene	0.80	0.200 U	0.200 U	0.200 U	1.00 U	0.200 U	1.00 U	0.200 U	1.00 U
1,1-Dichloroethene	0.057	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
cis-1,2-Dichloroethene	0.020	**0.135**	**2.19**	**0.0932**	**0.134**	**0.0347**	0.0200 U	**0.0368**	**0.156**
Trichloroethene	0.02	**0.0291**	**1.51**	0.0200 U	**0.0266**	0.0200 U	0.0200 U	0.0200 U	0.0200 U
Vinyl Chloride	0.05	**0.1300**	**1.21**	**0.123**	0.0482	0.0200 U	0.0200 U	0.0200 U	0.0200 U

Analyte	Current Cleanup Level[4]	Well ID [3]							
		CPOC Area							
		AOC-001 / AOC-002 Downgradient Plume Wells							
		GW190S-R		GW191D-R		GW192S-R		GW246S-R	
		2/1/2024	8/12/2024	2/2/2024	8/12/2024	2/1/2024	8/12/2024	1/31/2024	8/12/2024
Volatile Organic Compounds (µg/L)									
Benzene	0.80	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
1,1-Dichloroethene	0.057	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
cis-1,2-Dichloroethene	0.020	**0.0924**	**0.194**	**0.0254**	0.0200 U	**0.326**	**1.78**	**0.167**	**0.176**
Trichloroethene	0.02	0.0200 U	0.0200 U	0.0200 U	0.0200 U	**0.0231**	**0.0538**	0.0200 U	0.0200 U
Vinyl Chloride	0.05	**0.0506**	**0.0818**	**0.0627**	**0.0934**	**0.166**	**1.07**	NA	**0.181**

Analyte	Current Cleanup Level[4]	Well ID [3]									
		AOC-001 / AOC-002 CPOC Wells									
		GW185S-R		GW195S-R		GW196D-R		GW197S-R		GW245S-R	
		1/31/2024	8/12/2024	1/31/2024	8/12/2024	1/31/2024	8/12/2024	1/31/2024	8/12/2024	1/31/2024	8/12/2024
Volatile Organic Compounds (µg/L)											
Benzene	0.80	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.32	0.760	0.35	0.390
1,1-Dichloroethene	0.057	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	**0.15**	0.0468	0.0200 U	0.0200 U
cis-1,2-Dichloroethene	0.020	**0.112**	**0.240**	**0.0899**	**0.102**	**0.0282**	**0.0250**	**41.6**	**18.9**	**0.135**	**0.204**
Trichloroethene	0.02	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	**0.58**	**0.268**	**0.0235**	**0.0252**
Vinyl Chloride	0.05	**0.0823**	**0.124**	NA	**0.117**	NA	0.0213	NA	**12.6**	NA	**0.141**

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
NA = not analyzed
SWMU = solid waste management unit