

**2016 Annual Report
SWMU-17 Remedial Action
Enhanced Anaerobic Bioremediation
Boeing Developmental Center**

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Prepared for

**The Boeing Company
Seattle, Washington**



130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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This document was prepared by, or under the direct supervision of, the technical professionals noted below.

Document prepared by: Brandon R. Duncan Brandon R. Duncan, PE
Senior Project Engineer

Document reviewed by: Clinton L. Jacob Clinton L. Jacob, PE, LG
Principal Engineer

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Project Coordinator: ljc

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1-1
1.1 Background.....	1-1
1.2 Remedial Approach	1-2
1.3 Data Evaluation Considerations	1-3
2.0 SUMMARY OF PRIOR WORK	2-1
2.1 Prior Field Activities.....	2-1
2.2 Summary of Prior Findings	2-2
3.0 2016 ACTIVITIES AND RESULTS	3-1
4.0 DISCUSSION OF 2016 RESULTS	4-1
4.1 Treatment Condition Categories	4-1
4.2 TOC and Redox Conditions	4-2
4.3 Reductive Dechlorination of VOCs	4-3
4.4 Copper and Arsenic	4-5
5.0 PLANNED ACTIONS AND SCHEDULE	5-1
6.0 USE OF REPORT	6-1
7.0 REFERENCES	7-1

FIGURES

<u>Figure</u>	<u>Title</u>
1	Vicinity Map
2	SWMU-17 Site Plan
3	PCE/TCE in Groundwater Prior to Full-Scale Treatment
4	Groundwater Elevations April 2016
5	Groundwater Elevations November 2016
6	Source Zone Injection Well BDC-05-02 VOCs
7	Source Zone Injection Well BDC-05-07 VOCs
8	Plume Injection Well BDC-05-9 VOCs
9	Plume Injection Well BDC-05-10 VOCs
10	Plume Injection Well BDC-05-16 VOCs
11	Monitoring Well BDC-05-19 VOCs
12	Monitoring Well BDC-05-20 VOCs
13	Monitoring Well BDC-05-21 VOCs
14	Monitoring Well BDC-05-23 VOCs
15	Treatment Conditions
16	PCE/TCE in Groundwater November 2016
17	Vinyl Chloride in Groundwater November 2016
18	Average Molar Fractions and Total Chlorinated Ethenes

TABLES

<u>Table</u>	<u>Title</u>
1	Groundwater Data Summary
2	Bioremediation Groundwater Monitoring Matrix (Revised 5/2013)

APPENDICES

<u>Appendix</u>	<u>Title</u>
A	Laboratory Reports
B	Cumulative Groundwater Elevations
C	Time Plots – Molar Concentrations of VOCs and Breakdown Products
D	Time Plots – Aquifer Redox Parameters and TOC
E	Time Plots – Copper and Arsenic

LIST OF ABBREVIATIONS AND ACRONYMS

µg/L.....	micrograms per liter
µmoles/L.....	micromoles per liter
Boeing.....	The Boeing Company
cDCE.....	cis-1,2-dichloroethene
CO ₂	carbon dioxide
CULs.....	cleanup levels
CVOCs.....	chlorinated volatile organic compounds
DC.....	Developmental Center
DHC.....	Dehalococcoides
DO.....	dissolved oxygen
Ecology.....	Washington State Department of Ecology
EPA.....	US Environmental Protection Agency
ft.....	feet
IWs.....	injection wells
MEEA.....	methane/ethane/ethene/acetylene
mg/L.....	milligrams per liter
MTCA.....	Model Toxics Control Act
MWs.....	monitoring wells
ORP.....	oxidation-reduction potential
PCE.....	tetrachloroethene
RCRA.....	Resource Conservation and Recovery Act
SWMU.....	Solid Waste Management Unit
TCE.....	trichloroethene
TOC.....	total organic carbon
UST.....	underground storage tank
VC.....	vinyl chloride
VCP.....	voluntary cleanup program
VOC.....	volatile organic compound
Work Plan.....	SWMU-17 Remedial Action Work Plan

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1.0 INTRODUCTION

This document presents a 2016 annual report for the anaerobic bioremediation remedial action performed at Solid Waste Management Unit (SWMU)-17 of The Boeing Company's (Boeing) Developmental Center (DC) in Tukwila, Washington (Figure 1). The DC is a regulated facility under the Resource Conservation and Recovery Act (RCRA) with a facility identification number of WAD-09363-9946. The Washington State Department of Ecology (Ecology) is authorized by the US Environmental Protection Agency (EPA) to implement RCRA corrective action through its Model Toxics Control Act (MTCA) regulations. Boeing is performing remedial actions at the DC under Ecology's voluntary cleanup program (VCP).

Remedial action at SWMU-17 is performed to enhance reductive dechlorination of tetrachloroethene (PCE), trichloroethene (TCE), and their breakdown products present in groundwater. The primary reductive dechlorination breakdown products of PCE and TCE are cis-1,2-dichloroethene (cDCE) and vinyl chloride (VC). SWMU-17 wells and site features are shown on Figure 2. Anaerobic bioremediation remedial action was performed in general accordance with the SWMU-17 Remedial Action Work Plan (Work Plan; LAI 2011).

This fifth annual report following the start of the SWMU-17 remedial action in 2011 summarizes the remedial action activities and results for calendar year 2016. Activities during this reporting period consisted of performance monitoring and data evaluation. No additional electron donor injection has been required since the initial injection event in 2011.

1.1 Background

SWMU-17 (Figure 2) comprises the general area of a former 67-gallon sump and associated 4,000-gallon steel underground storage tank (UST; designated DC 05) located west of Building 9-64. Waste oil generated by hydraulic testing shops, automotive maintenance shops, and various other operations at the DC was discharged to the sump, which flowed into the UST. Periodically, waste oil was pumped from the UST for offsite treatment and disposal (SAIC 1994). The sump and UST were installed in 1957 and removed in late March or early April 1986 (LAI 1987).

Following removal of the sump and UST, and initial phases of the investigation (LAI 2004), groundwater monitoring has focused on chlorinated volatile organic compounds (CVOCs) and selected metals (copper and arsenic). CVOCs of interest included PCE, TCE, and reductive dechlorination breakdown products cDCE and VC. Initially, preliminary screening levels (LAI 2002) were exceeded for PCE and intermittently for dissolved metals (copper only) and total metals (both copper and arsenic), with total metals concentrations historically higher than dissolved concentrations. Through May 2008, prior to bioremediation pilot testing, the highest concentrations of PCE and TCE were detected at wells BDC-05-02 and BDC 05-07 (LAI 2008). Groundwater concentrations of PCE ranged from approximately 5 to 33 micrograms per liter ($\mu\text{g}/\text{L}$) at BDC-05-07 and BDC-05-02; TCE at these two wells ranged from 7 to 45 $\mu\text{g}/\text{L}$. Preliminary screening levels for total and dissolved copper and total arsenic

were exceeded in groundwater at multiple wells. Cumulative data for these constituents are presented for SWMU-17 wells in Table 1. Proposed cleanup levels (CULs), developed for the DC in 2013 (LAI 2013b) were lower than initial screening levels, with the exception of CULs for arsenic and copper, which increased. Proposed CULs are presented for comparison to data in Table 1.

Bioremediation pilot testing, consisting of electron donor injection to enhance biological degradation of PCE and TCE, was conducted October 2008 through February 2010. Water amended with electron donor substrates, nutrients, and ferrous sulfate was injected to well BDC-05-02. Ferrous sulfate was included in the injection solution to stimulate removal of dissolved copper and arsenic from groundwater and abiotic degradation of PCE and TCE through reaction with formed iron sulfides. The resulting biodegradation substantially reduced PCE and TCE at the injected well and, with time, at the nearest downgradient well. The effectiveness of the ferrous sulfate addition was inconclusive. Details of the pilot test can be found in the Pilot Test Report (LAI 2010b) and the subsequent Response to Ecology Comments (LAI 2010a).

To further characterize the SWMU-17 plume, groundwater was sampled from 67 additional direct-push borings in 2010 and 2011, resulting in characterization of the horizontal and vertical extents of contamination (LAI 2011). Results from the deeper borings confirmed that contamination is restricted to the shallow interval. Iso-concentration contours representing SWMU-17 concentrations of PCE and/or TCE prior to full-scale treatment are presented on Figure 3. Both PCE and TCE are parent products targeted for remediation. cDCE and VC, anaerobic biodegradation end products of PCE and TCE, were also detected. Further details on plume characterization and evaluation of contaminant distribution were provided in the Work Plan (LAI 2011).

1.2 Remedial Approach

Anaerobic bioremediation at SWMU-17 is accomplished through stimulation of micro-organisms present in the aquifer to enhance biodegradation of chloroethenes. Vegetable oil and ethyl lactate (electron donor substrates) were injected throughout the higher-concentration core of the plume to stimulate biotic reductive dechlorination of PCE and TCE (electron acceptors).

Reductive dechlorination of PCE and TCE occurs through microbially mediated (biotic) reactions whereby micro-organisms obtain energy through oxidation-reduction (redox) reactions. Electron donors (hydrogen, fatty acids, etc.) are used by microbes together with various electron acceptors (oxygen, nitrate, manganese [IV], ferric iron, sulfate, and carbon dioxide). These redox reactions can be compared to the process of humans obtaining energy through consumption of food (electron donor) and oxygen (electron acceptor). Bacteria obtain the greatest energy yield by using oxygen as an acceptor, as it is highly oxidized and, therefore, can be reduced easily and to a large degree. When oxygen is depleted in an uncontaminated aquifer, bacteria sequentially use the less oxidized electron acceptors in the following order: nitrate; manganese (IV); iron (III) (i.e., ferric iron); sulfate; and carbon dioxide.

Chloroethenes can also be used as electron acceptors by specific micro-organisms and degraded to harmless end products. Through biodegradation, chloride ions present on the chlorinated hydrocarbon molecule are replaced with hydrogen (electron donor), resulting in the formation of successively less chlorinated molecules. By this process, PCE and TCE are degraded to less chlorinated breakdown products, cDCE and VC, and then to innocuous end products ethene and ethane. PCE is the most oxidized electron acceptor in typical groundwater systems after oxygen and, therefore, can be reduced as soon as oxygen is depleted (Vogel et al. 1987a). TCE, cDCE, and VC, however, require successively more reducing aquifer conditions for degradation. TCE can be degraded under iron-reducing conditions (Chapelle 1996); cDCE can be degraded under sulfate-reducing to carbon dioxide (CO₂)-reducing (i.e., methanogenic) conditions (Chapelle 1996, Vogel et al. 1987b); and VC can be degraded only under highly reducing methanogenic conditions (Ballapragada et al. 1997, Freedman and Gossett 1989, Maymo-Gatell et al. 1995, Vogel and McCarthy 1985).

Reductive dechlorination is enhanced through the injection of electron donor substrates (e.g., vegetable oil and lactate) as a food source for the bacteria. Electron donor substrates are injected into the contaminated aquifer where a consortium of indigenous bacteria first ferment the substrate to volatile fatty acids and hydrogen and then use these fermentation products as electron donor for reduction of natural electron acceptors and chloroethenes. Depletion of natural electron acceptors (e.g., oxygen, iron, sulfate, CO₂) creates the highly reducing aquifer conditions (sulfate-reducing to methanogenic conditions) required for complete reductive dechlorination of PCE and breakdown products. Hydrogen is the required electron donor for the primary cDCE and VC degraders (i.e., *Dehalococcoides* [DHC] strains¹) that degrade these PCE breakdown products to harmless, non-chlorinated end products. Other anaerobic dechlorinating organisms are typically common and widespread, and utilize fatty acids or hydrogen as the electron donor.

1.3 Data Evaluation Considerations

Evaluation of results requires consideration of whether data is from injection wells (IWs) or monitoring wells (MWs). These well types are identified in Table 1 and are identified by different symbols on Figures 2 and 3. Characteristics of these two groups of wells are as follows:

- IWs: Generally located within the high-concentration core of the PCE/TCE plume. Due to higher initial concentrations of PCE and TCE, biodegradation to breakdown products and end products is most apparent. Because these wells were used for injection, TOC concentrations (indicative of electron donor) are likely to be higher and persist for longer than at nearby MWs. Similarly, enhanced aquifer redox conditions are likely to develop sooner and persist for longer than in the rest of the aquifer.
- MWs: Groundwater data from MWs provide insight to the downgradient and crossgradient extent of treatment effects, including distribution of total organic carbon (TOC), enhanced redox conditions, and dechlorination breakdown products and end products. An

¹ Recent, and as yet unpublished, work from Dr. Frank Loeffler of the University of Tennessee indicates that some bacteria of the *Dehalogenimonas* genus may also mediate this degradation step (<https://attendee.gotowebinar.com/recording/3849949141293136642>).

understanding of the MW locations relative to the plume and to IWs is also important for evaluation of the data, as follows:

- MW BDC-05-19 is within the core of the contaminant plume. Similar to the IWs, higher initial concentrations of PCE and TCE make biodegradation to breakdown products and end products more apparent at this well.
- Other MWs are at the fringes of the plume, both downgradient (BDC-05-20) and crossgradient (BDC-05-03, BDC-05-04, BDC-05-08, BDC-05-18, BDC-05-21, BDC-05-22, and BDC-05-24), and an additional well is far downgradient (BDC-05-23). Concentration and treatment trends apparent at wells located within the higher-concentration core of the plume may not be readily apparent at wells at the fringes of the plume due to lower initial concentrations of PCE and TCE at fringe wells. Some of these wells have shown post-injection increases in TOC concentrations and/or changes in redox conditions, indicating the extent of treatment effects.
- An additional MW is located upgradient of the plume (BDC-05-05). This well is sampled for continued evaluation of background conditions and is unaffected by bioremediation.

2.0 SUMMARY OF PRIOR WORK

This section briefly summarizes remedial action activities that took place during the previous reporting periods (June 2011 through December 2015), as documented in previous reports (LAI 2013a, 2014, 2016a, b). Field activities and data findings are summarized below.

2.1 Prior Field Activities

Prior field activities consisted of installation of IWs and MWs, electron donor injection, and groundwater monitoring.

Sixteen additional groundwater wells (BDC-05-09 through BDC-05-24) were installed July 5 through July 11, 2011. This supplemented 6 existing wells (BDC-05-02 through BDC-05-05, BDC 05 07, and BDC-05-08) for a total of 22 SWMU-17 wells utilized for the remedial action. Well locations are presented on Figure 2.

An electron donor solution was injected into 11 wells August 15 through 18, 2011. Each of the 11 wells (BDC-05-02, BDC-05-07, and BDC-05-09 through BDC-05-17) was injected with approximately 5,600 gallons of donor injection fluid, consisting of approximately 5,300 gallons of potable water from an onsite hydrant, 320 gallons of LactOil™ donor substrate, and 2 pounds of yeast extract. A total of 66,800 gallons was injected. LactOil is a combination donor substrate containing both soluble (fast-release) ethyl lactate and insoluble (slow-release) soybean oil.

Baseline sampling was performed in July 2011, followed by ongoing post-injection sampling that consists of two semiannual sampling events and two quarterly sampling events each year. Semiannual sampling events were conducted in April/May and November each year, beginning with November 2011, and involved sampling 22 wells. Quarterly sampling events were conducted in January/February and August/September each year, beginning with February 2012, and involved sampling 10 wells. Samples were analyzed for target contaminants and breakdown products (PCE, TCE, cDCE, and VC); non-toxic end products (ethene and ethane); parameters indicative of aquifer redox conditions (dissolved oxygen [DO], oxidation-reduction potential [ORP], nitrate, ferrous iron, sulfate, and methane); TOC and pH indicative of electron donor; and total and dissolved copper and arsenic. In accordance with the Work Plan, laboratory analysis of methane/ethane/ethene/acetylene (MEEA) was performed at select wells. Nitrate, which was consistently not detected, was determined to not be useful for evaluation of aquifer redox conditions at the site, and nitrate analysis was discontinued beginning in May 2012. MEEA was added to additional wells BDC-05-03, BDC-05-21, and BDC-05-24 beginning with the May 2013 semiannual sampling event to improve evaluation of treatment progress.

2.2 Summary of Prior Findings

This section briefly summarizes prior findings to provide context for discussion of results from the current reporting period (Section 4.0). Findings through October 2015 demonstrated substantial treatment in the first 50 months following donor injection.

Baseline data showed conditions conducive to limited biodegradation of PCE and TCE. The highest baseline concentrations of PCE and TCE were 39 µg/L (BDC-05-10) and 28 µg/L (BDC-05-15), respectively. cDCE, the first reductive dechlorination sequential breakdown product, was commonly detected (ranged 0.2 to 45 µg/L), but VC and end products ethene and ethane were below reporting limits. Baseline aquifer redox conditions were variable, with more highly reducing conditions (sulfate-reducing to methanogenic) occurring at source zone wells BDC-05-02 and BDC-05-07 due to prior pilot testing, and predominantly mild to moderately reducing conditions (nitrate to iron-reducing) occurring elsewhere in the plume. TOC concentrations were below 10 milligrams per liter (mg/L) at most wells, which is the threshold generally considered to represent sufficient electron donor to support substantial reductive dechlorination (Major et al. 2003).

Post-injection monitoring through October 2015 indicated that bioremediation had been substantially enhanced due to electron donor injection. Monitoring data provided “direct evidence” of biodegradation of PCE, TCE, and breakdown products at 16 of 22 monitored wells, including, the 11 IWs and 5 downgradient or crossgradient MWs. Direct evidence consisted of elevated TOC, more highly reduced aquifer redox conditions, and changes in concentrations of PCE, TCE, or breakdown products. Bioremediation was substantially enhanced at the farthest downgradient well (BDC-05-23 at 170 feet [ft] downgradient) and up to 30 ft crossgradient of IWs at monitoring well BDC-05-21. Five additional MWs showed “some evidence” of enhanced bioremediation consisting of elevated TOC or a change in concentrations of PCE, TCE, or breakdown products, but not both indicators; “some evidence” of bioremediation occurred at MWs located up to 48 ft crossgradient (BDC-05-22) of IWs. Only BDC-05-05, which is upgradient of the injection and not expected to be affected, showed no evidence of enhanced bioremediation. A summary of more specific findings is as follows:

- **TOC:** TOC concentrations were enhanced for bioremediation throughout the core of the contaminant plume and many of the crossgradient and downgradient monitoring wells. TOC at IWs ranged from 550 to 5,360 mg/L during the November 2011 sampling event conducted 2.5 months after the donor injection. As of October 2015 (50 months post-injection), TOC had decreased substantially at all IWs (3 to 32 mg/L), and was near baseline concentrations at the five eastern injection wells near the head of the plume (BDC-05-02, BDC-05-07, BDC-05-09, BDC-05-10, BDC-05-11). TOC remained above baseline (29 mg/L) at one (BDC-05-19) of the five downgradient and crossgradient wells that exhibited “direct evidence” of enhanced bioremediation. TOC at all other monitoring wells, including wells that exhibited “some evidence,” had declined to near baseline concentrations.
- **Redox Conditions:** Highly reducing aquifer redox conditions required for complete reductive dechlorination of PCE, TCE, and breakdown products were achieved throughout the core of the plume. This was indicated by generally low concentrations of sulfate and elevated

concentrations of methane that persisted at all IWs through October 2015. Highly reducing conditions were also achieved at downgradient and crossgradient wells exhibiting “direct evidence” of enhanced bioremediation and at three wells showing “some evidence” (BDC-05-03, BDC-05-04, and BDC-05-22) of enhanced bioremediation. Enhanced redox is indicated by decreases in sulfate and/or increases in methane. At other MWs, redox changes were minor (e.g., decreasing DO, increased ferrous iron) or short-lived (e.g., a brief decrease in sulfate followed by a rebound to baseline levels).

- Reductive Dechlorination: Reductive dechlorination was enhanced at all SWMU-17 wells with the exception of upgradient well BDC-05-05. As of October 2015 PCE remained below the proposed CUL (5.3 µg/L) at all wells, and TCE was below the proposed CUL (1.4 µg/L) at all wells with one exception (BDC-05-18). Concentrations of PCE and TCE at BDC-05-10, which had the highest baseline concentration of PCE and the second highest concentration of TCE, had remained less than the reporting limit (0.2 µg/L) from May 2012, representing a concentration reduction of more than 99 percent. Increases in one or more breakdown products (cDCE and VC) or end products (ethene and ethane) were observed at all IWs. After peaking, cDCE concentrations decreased and remained below proposed CULs since November 2012. VC concentrations remained elevated above proposed CULs at 10 wells as of October 2015. However, complete reductive dechlorination was evidenced by innocuous end product ethene detected at 16 of 17 wells in October 2015. Evaluation of results on a molar basis indicated a steady shift from a predominance of chlorinated ethenes (PCE, TCE, cDCE, and VC) to non-chlorinated end products (ethene and/or ethane) at all wells with significant baseline PCE and TCE concentrations. Ethene+ethane was predominant at 15 wells as of October 2015.
- Concentrations of arsenic and copper increased at many SWMU-17 wells following the August 2011 injection, consistent with results observed during bioremediation pilot testing. However, from November 2012 through October 2015, total and dissolved copper concentrations have remained below the proposed CUL (0.008 mg/L) at every well, except for BDC-05-03. Total copper at BDC-05-03 was detected at 0.009 mg/L in October 2015, just above the proposed CUL. As of October 2015, total and dissolved arsenic concentrations remained above the proposed CUL of 0.008 mg/L at 16 of 22 sampled wells. Solubilization of reduced arsenic (along with manganese and iron) is a localized and temporary phenomenon that occurs within the portion of the aquifer that has been artificially reduced through donor amendment. Once the injected donor has been consumed and natural conditions are re-established, these metals should return to the less soluble forms that existed prior to donor amendment (Solutions-EIS 2006, Suthersan et al. 2003).

3.0 2016 ACTIVITIES AND RESULTS

2016 activities consisted of quarterly and semiannual performance monitoring. Quarterly monitoring was performed at 10 wells, including 3 representative IWs (BDC-05-02, BDC-05-12, and BDC-05-16); 3 MWs located near the core of the plume (BDC-05-18 through BDC-05-20); and 4 downgradient and crossgradient monitoring wells (BDC-05-21 through BDC-05-24). Semiannual sampling was performed at all 22 wells, and included collection of groundwater elevations.

As indicated in Table 2, samples were analyzed for target contaminants and breakdown products (PCE, TCE, cDCE, and VC); non-toxic end products (ethene and ethane); parameters indicative of aquifer redox conditions (DO, ORP, ferrous iron, sulfate, and methane); and TOC and pH indicative of electron donor. In accordance with the Work Plan, laboratory analysis of MEEA was performed at select wells. In addition, metals analysis for total and dissolved copper and arsenic was performed during semiannual monitoring. Laboratory analysis was performed by Eurofins Lancaster Laboratories Environmental. Parameters DO, ORP, ferrous iron, and pH were measured in the field. Groundwater monitoring data are presented in Table 1. Laboratory reports for the reporting period are presented in Appendix A.

Groundwater elevations were measured during the April and November 2016 semiannual sampling events. As expected from previous data, results show generally west-southwesterly groundwater flow, with localized northerly and southerly components of flow near the head to middle portion of the plume. These groundwater flow directions are consistent with contaminant distribution in the aquifer. Groundwater elevation contours for April and November 2016 are presented on Figures 4 and 5. Cumulative groundwater elevation data for SWMU-17 wells are presented in Appendix B.

4.0 DISCUSSION OF 2016 RESULTS

This section presents discussion and interpretation of data collected during 2016 monitoring. As of the November 2016 sampling event, all wells were below proposed CULs for PCE, cDCE, and VC, while 2 of the 22 wells were above the CUL for TCE. Groundwater monitoring results show that *in situ* anaerobic bioremediation continues to be enhanced, despite declining TOC concentrations. Results indicate enhanced aquifer redox conditions and enhanced reductive dechlorination. Complete reductive dechlorination is occurring, as indicated by detection of end products ethene and/or ethane, at the majority of IWs and MWs where analyzed. At all wells where ethene and/or ethane were detected in November 2016, these innocuous end products have become predominant over the chlorinated ethenes (i.e., there is more ethene+ethane on a molar basis than PCE, TCE, cDCE, or VC), demonstrating a conversion of the toxic parent and breakdown products to non-toxic end products. November 2016 data were collected 63 months following the August 2011 electron donor injection.

Monitoring results, including volatile organic compound (VOC) molar fractions, are summarized in a cumulative data table (Table 1), presented on various figures and appendices, and discussed further in the following sections. Figures 6 through 14 show VOC concentrations over time at representative wells: BDC-05-02 and BDC 05 07 (source zone IWs); BDC 05-9, BDC-05-10 and BDC-05-16 (plume IWs); BDC-05-19 (MW between IWs in the core of the plume); BDC-05-20 and BDC-05-21 (MWs at downgradient edge of the plume); and BDC-05-23 (far downgradient MW). Time plots for molar concentrations of VOCs and breakdown products for the representative wells are presented in Appendix C. Time plots of redox parameters (methane and sulfate) and TOC for representative wells are presented in Appendix D.

4.1 Treatment Condition Categories

As described in previous reports (LAI 2013a, 2014, 2016a, b), SWMU-17 wells can be separated into three categories based on evidence of enhanced conditions for bioremediation. Wells are divided into these categories based on post injection data through November 2016, as described below and as shown on Figure 15.

1. **Direct Evidence:** Sixteen wells show “direct evidence” of enhanced bioremediation. In order for a well to be classified as showing “direct evidence,” each enhanced bioremediation indicator must have been demonstrated at the well for a sustained period of time after the injection. These indicators consist of: 1) TOC above baseline, 2) reduced aquifer redox conditions, and 3) changed concentrations of PCE, TCE, cDCE, VC, and/or ethene/ethane. The wells that meet these criteria consist of:
 - All 11 IWs: BDC-05-02, BDC-05-07, BDC-05-09 through BDC-05-17
 - Five MWs:
 - BDC-05-08 (24 ft crossgradient of IWs BDC-05-12 and BDC-05-13)
 - BDC-05-19 (10 ft downgradient of IW BDC-05-12)
 - BDC-05-20 (31 ft downgradient of IW BDC-05-17)

-
- BDC-05-21 (30 ft crossgradient of IW BDC-05-17)
 - BDC-05-23 (farthest downgradient well at 170 ft downgradient of IW BDC-05-17).
2. **Some Evidence:** Five MWs show “some evidence” of enhanced bioremediation. Evidence at these wells consists primarily of changes in VOC concentrations without substantial or sustained changes in TOC compared to baseline; sustained aquifer redox changes have been apparent at some of these wells. The wells in this category are considered to be on the fringes of the biotreatment area with VOC concentration reduction resulting from upgradient or nearby treatment. VOCs were below proposed CULs for the entire reporting period at BDC-05-03, BDC-05-04, BDC-05-22, and BDC-05-24. TCE has previously exceeded the proposed CUL at all of following wells, except BDC-05-04.
- BDC-05-03 (17 ft downgradient of IW BDC-05-11)
 - BDC-05-04 (22 ft crossgradient of IW BDC-05-07)
 - BDC-05-18 (12 ft crossgradient of IW BDC-05-10)
 - BDC-05-22 (48 ft crossgradient of IW BDC-05-17)
 - BDC-05-24 (18 ft crossgradient of IW BDC-05-14).
3. **No Evidence:** The only well to show no evidence of enhanced bioremediation is upgradient MW BDC-05-05, which is not expected to be affected by donor injection.

Based on this categorization of monitoring results, there is “direct evidence” that bioremediation has been substantially enhanced at IWs and at MWs located up to 170 ft downgradient (BDC-05-23) and up to 30 ft crossgradient (BDC-05-21) of IWs. “Some evidence” of bioremediation occurs at all remaining wells with the exception of the upgradient MW BDC-05-05. The data demonstrates enhanced bioremediation has been sustained from the 2011 injection through 2016.

4.2 TOC and Redox Conditions

Monitoring results indicate aquifer TOC and redox conditions have been enhanced throughout the core of the contaminant plume and at many of the crossgradient and downgradient monitoring wells following the August 2011 injection. These results indicate conditions conducive to continued enhanced bioremediation of PCE/TCE and breakdown products. Due to the August 2011 injection, TOC increased from low baseline levels at all IWs to a range of 550 to 5,360 mg/L.

As of November 2016, TOC has declined to near baseline at the five eastern IWs near the head of the plume (BDC-05-02, BDC-05-07, BDC-05-09, BDC-05-10, BDC-05-11), while it remains greater than 10 mg/L (11 to 23 mg/L) at the six western IWs (BDC-05-12 through BDC-05-17). A TOC concentration of 10 mg/L or more is generally considered to represent sufficient electron donor to support substantial reductive dechlorination (Major et al. 2003). Lower levels of TOC may support an extended period of residual treatment. Historic TOC increases at wells with “some evidence” were short-lived and have not been sustained.

Highly reducing conditions required for reductive dechlorination persist throughout the core of the plume, as indicated by generally low concentrations of sulfate and elevated concentrations of methane in all IWs through November 2016. Highly reducing conditions have also been achieved at all monitoring wells showing “direct evidence” of enhanced bioremediation (Section 4.1), except for BDC-05-23, which shows signs of moderate reducing conditions with elevated sulfate concentrations. Highly reducing conditions also occur at three wells showing “some evidence” (BDC-05-04, BDC-05-22, and BDC-05-24) of enhanced bioremediation; enhanced redox is indicated by decreases in sulfate and/or increases in methane. At other downgradient and crossgradient MWs, redox changes have been minor (e.g., decreased DO or increased ferrous iron) or short-lived (e.g., a brief decrease in sulfate followed by a rebound to baseline levels).

4.3 Reductive Dechlorination of VOCs

Enhanced reductive dechlorination following the August 2011 donor injection has resulted in substantially decreased PCE/TCE concentrations, conversion to intermediary breakdown products cDCE and VC, and conversion to end products ethene and ethane. Reductive dechlorination has resulted in concentration reduction at all SWMU-17 wells with the exception of upgradient well BDC-05-05, which is outside the treatment area.

During 2016, PCE remained below the proposed CUL (5.3 µg/L) at all wells, and TCE was at or below the proposed CUL (1.4 µg/L) at all but three wells (BDC-05-02, BDC-05-05, and BDC-05-18). At BDC-05-02, TCE was slightly elevated above the proposed CUL in January (1.7 µg/L) and August (1.6 µg/L), but it was below the proposed CUL in April and November. TCE was detected above the proposed CUL in November for the first time at BDC-05-05 (1.5 µg/L), which is upgradient of the source and treatment area; this is not inconsistent with prior results, which have been as high as 1.2 µg/L. At BDC-05-18, TCE increased above the proposed CUL in January (2.9 µg/L) and remained above through November (1.6 µg/L). At well BDC-05-10, which had the highest baseline concentration of PCE and the second highest TCE concentration, PCE and TCE have remained persistently less than the reporting limit from May 2012 through 2016; this represents a concentration reduction of greater than 99 percent. November 2016 PCE/TCE concentrations in groundwater are presented on Figure 16, for comparison to baseline PCE/TCE iso-concentration contours (Figure 3).

Reductive dechlorination has resulted in temporary increases in breakdown products cDCE and VC. After reaching a maximum concentration of 250 µg/L at well BDC-05-09 in May 2012, cDCE concentrations have remained below the proposed CUL (134 µg/L) at all wells since November 2012. The maximum cDCE detection in 2016 (7.3 µg/L at crossgradient well BDC-05-22 in April) was well below the proposed CUL. The maximum plume concentration of VC was 6.8 µg/L at IW BDC-05-20 in April. A total of 4 wells had VC concentrations above the proposed CUL (2.4 µg/L) during 2016. However, in November 2016 VC concentrations were below the proposed CUL at all wells for the first time since treatment began. Ethene and/or ethane were also detected at the four wells where VC

exceeded the proposed CUL during the reporting period and ethene+ethane was predominant at two of these wells. November VC concentrations in groundwater are presented on Figure 17.

Complete reductive dechlorination is evidenced by widespread occurrence of innocuous end products ethene and ethane. One or both of these compounds were detected at 15 of the 17 wells where analyzed in 2016. Neither were detected at BDC-05-03 or BDC-05-18.

The progress of dechlorination is also evaluated based on the prevalence of parent products, breakdown products, and end products. Reductive dechlorination progresses sequentially from parent products PCE and TCE, to breakdown products cDCE and VC, to non-toxic end products ethene and ethane. This is because bacteria prefer to degrade the parent and breakdown products in the following sequence:



This is because bacteria gain more energy from reduction of the more chlorinated (i.e., more oxidized) compounds. As a result of this sequential degradation, the concentrations of parent, breakdown, and end products each peak sequentially as treatment progresses. Figure 18 presents the percentage (average molar fraction) of total ethenes contributed by PCE, TCE, cDCE, VC, and ethene+ethane over time for all 17 of SWMU-17 wells where ethene and ethane are analyzed; the shift from parent product and breakdown product predominance to predominance of non-toxic ethene+ethane is readily apparent. Ethene/ethane predominance means that ethene+ethane constitutes a higher percentage of total ethenes (i.e., CVOCs + end products) than do each of the chlorinated ethenes (PCE, TCE, cDCE, or VC). As of November 2016, ethene+ethane was predominant at most SWMU-17 wells (12 of 16 where ethene+ethane was analyzed and where CVOCs or breakdown products were detected). Ethene+ethane represented just 1.7 percent of the total ethenes during baseline sampling in July 2011. Due to biodegradation stimulated by the 2011 injection, the ethene+ethane molar fraction has increased to more than 70 percent since November 2013 and was at a maximum level of 91.5 percent in November 2016.

The succession of chlorinated ethene conversion to innocuous end products results in a decrease in total chlorinated ethenes concentrations (micromoles per liter [$\mu\text{moles/L}$]) over time. Total chlorinated ethenes is the molar sum of PCE + TCE + cDCE + VC. A decrease in the concentration of total chlorinated ethenes demonstrates mass destruction, not just conversion to a less-chlorinated breakdown product (e.g., TCE to VC). Initial periods of increased total chlorinated ethenes commonly indicate enhanced desorption of contaminant mass that was partitioned to the aquifer soil matrix and liberated by surfactant properties of the injected donor solution and by biosurfactants released by stimulated bacteria. Decreasing concentrations of total chlorinated ethenes reflects the final conversion step from VC to non-chlorinated end products ethene and ethane. Total chlorinated ethenes are tabulated in Table 1 and are shown on time plots for representative wells in Appendix C. Figure 18 presents a time plot of average total chlorinated ethenes for all SWMU-17 wells. It can be seen that average total chlorinated ethenes increased through May 2012 due to enhanced desorption,

then decreased substantially through 2016. Average total chlorinated ethenes through November 2016 show a substantial reduction (approximately 94 percent) compared to baseline and a 96 percent reduction compared to the May 2012 peak.

In summary, data show that PCE and its associated breakdown products are being effectively converted to non-toxic end products by bioremediation. Comparing current contaminant concentrations to proposed CULs, indicates that treatment is in its final stages. Throughout 2016 TCE was detected above the proposed CUL at 3 wells, while VC was detected above the proposed CUL at 4 wells. However, in November 2016, PCE, cDCE, and VC concentrations were below proposed CULs at all 22 wells, and TCE was above the proposed CUL at just 2 of the 22 wells. Detection of ethene and/or ethane at 15 of the 17 wells where analyzed in 2016 and widespread ethene+ethane predominance confirms continued complete reductive dechlorination to these non-toxic end products.

4.4 Copper and Arsenic

Concentrations of copper and arsenic increased at many SWMU-17 wells following the August 2011 injection. Copper has decreased at most wells while arsenic remains above the proposed CUL (Section 2.2). These results are consistent with observations during bioremediation pilot testing. Time plots for total copper and arsenic are presented for injection wells and monitoring wells in Appendix E.

As of November 2016, total and dissolved arsenic concentrations remained above the proposed CUL of 0.008 mg/L at 13 of 21 sampled wells, compared to 16 above the CUL in October 2015.

Concentrations at these 13 wells have been consistently above the proposed CUL since injection. The highest November 2016 concentration was a total arsenic result of 0.047 mg/L at well BDC-05-15. Reducing conditions may cause mobilization of naturally occurring arsenic (along with manganese and iron) as a localized and temporary phenomenon within the portion of the aquifer that has been artificially reduced through donor amendment. Once the injected donor has been consumed and natural conditions are re-established, these metals should precipitate as the less soluble forms that existed prior to donor amendment (Solutions-EIS 2006, Suthersan et al. 2003). However, because of elevated natural background concentrations of arsenic commonly observed within in the Duwamish area due to naturally reduced aquifer conditions, arsenic concentrations may not achieve the CUL at project completion. In November 2016, total and dissolved copper concentrations were below the proposed CULs at all wells.

5.0 PLANNED ACTIONS AND SCHEDULE

Planned actions for 2017 consist of continued quarterly (February and August) and semiannual (April and November) monitoring events. Despite decreased TOC concentrations, the aquifer redox conditions remain conducive to continued treatment of the remaining CVOCs, and 2016 data continue to show complete dechlorination to ethene/ethane. Additional focused injections of electron donor may be appropriate at selected wells. Monitoring will continue as indicated in the Table 2 monitoring matrix.

6.0 USE OF REPORT

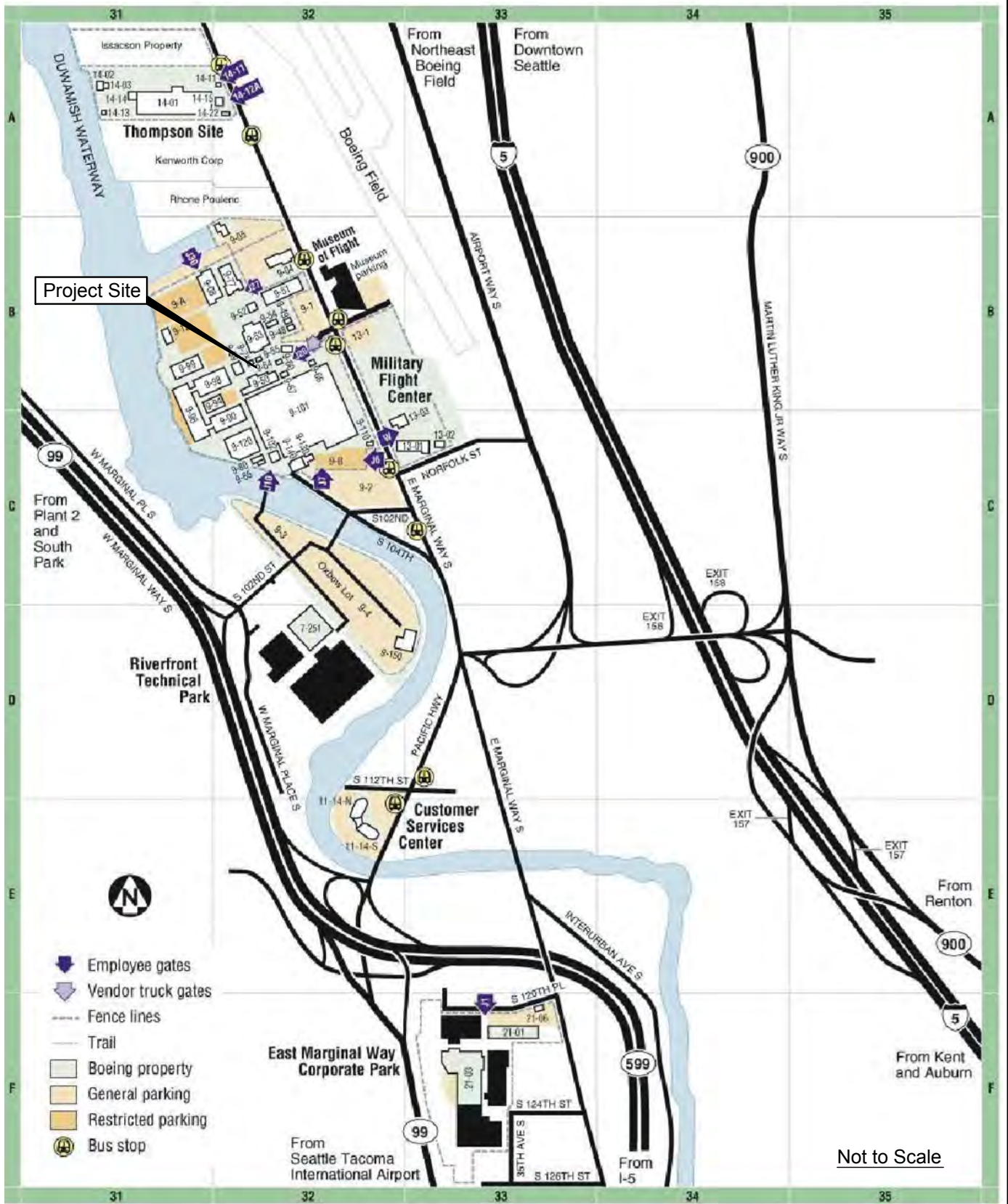
This annual evaluation report has been prepared for the exclusive use of The Boeing Company for specific application to the Boeing Developmental Center. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

7.0 REFERENCES

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Boeing/Developmental Center/Evaluation Report | G:\Projects\025\093\113\02\1\SSWMU-17-2013 Annual\Figure 01 VicMap.dwg (A) "Figure 1" 12/31/2013



Map Provided by Boeing, March 2000

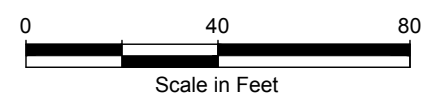
<p>Boeing Developmental Center Tukwila, Washington</p>	<p>Vicinity Map</p>	<p>Figure 1</p>
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Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



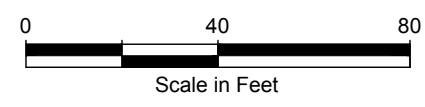


Legend

- Monitoring Well
- Injection Wells
- Abandoned Monitoring Well
- Catch Basin
- Manhole
- Sanitary Sewer Utility
- Storm Drain Utility
- Electrical Utility
- Water Utility
- Existing Fence
- Iso-Concentration Contours for PCE and/or TCE ($\mu\text{g/L}$) (Based on Monitoring Well and Direct-Push Sample Results)
- Solid Waste Management Unit

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



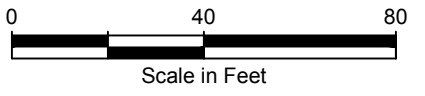
LANDAU ASSOCIATES, INC. | G:\Projects\025093116\021\F04 GW\April2016.dwg (A) "Figure 4" 12/30/2016

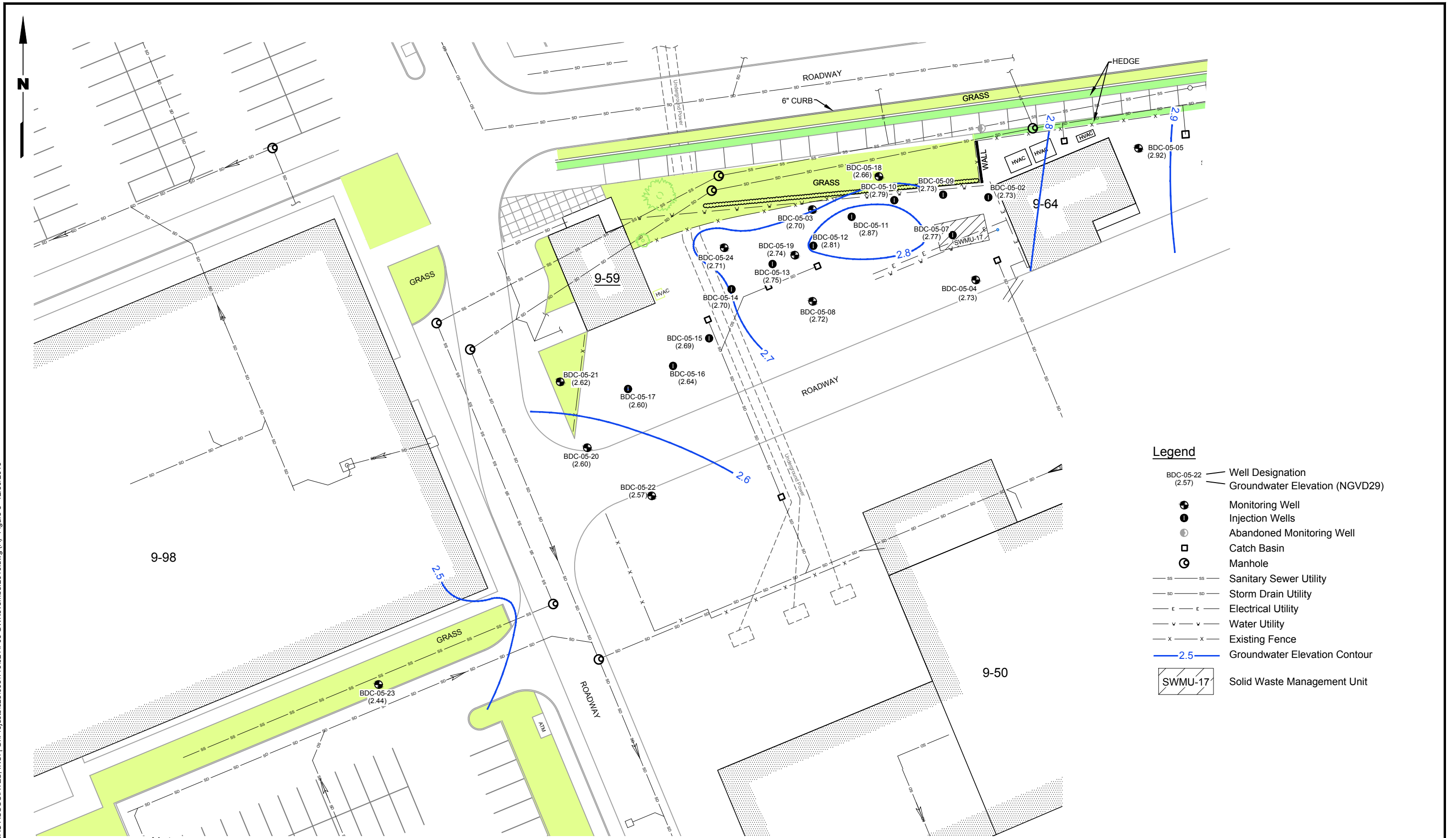


- Legend**
- BDC-05-22 (2.43) — Well Designation
 - Groundwater Elevation (NGVD29)
 - Monitoring Well
 - Injection Wells
 - Abandoned Monitoring Well
 - Catch Basin
 - ⊙ Manhole
 - SS — Sanitary Sewer Utility
 - SD — Storm Drain Utility
 - E — Electrical Utility
 - W — Water Utility
 - X — Existing Fence
 - 2.2 — Groundwater Elevation Contour
 - SWMU-17 Solid Waste Management Unit

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.





Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

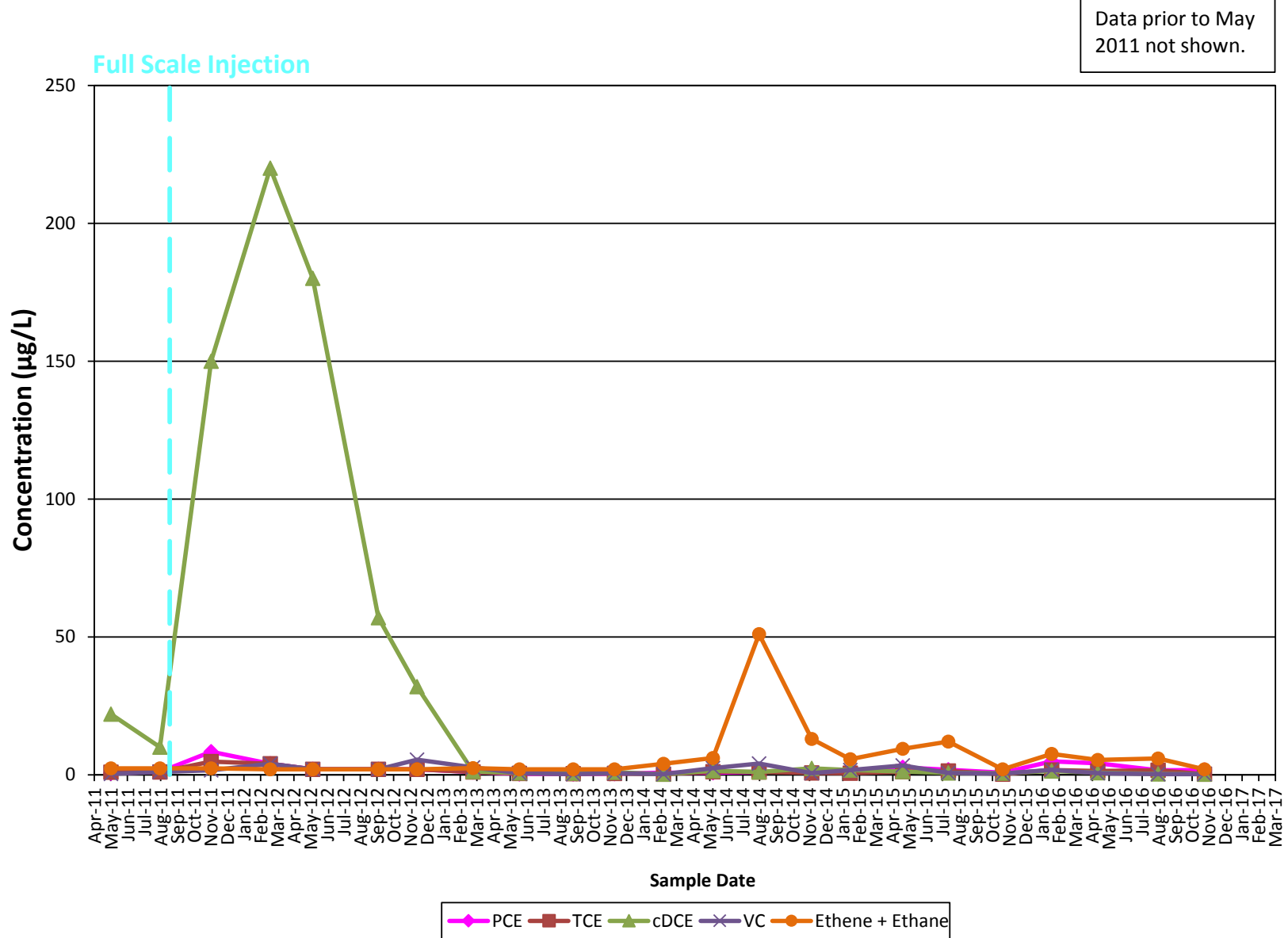


Boeing Developmental Center
Tukwila, Washington

**Groundwater Elevations
November 2016**

Figure
5

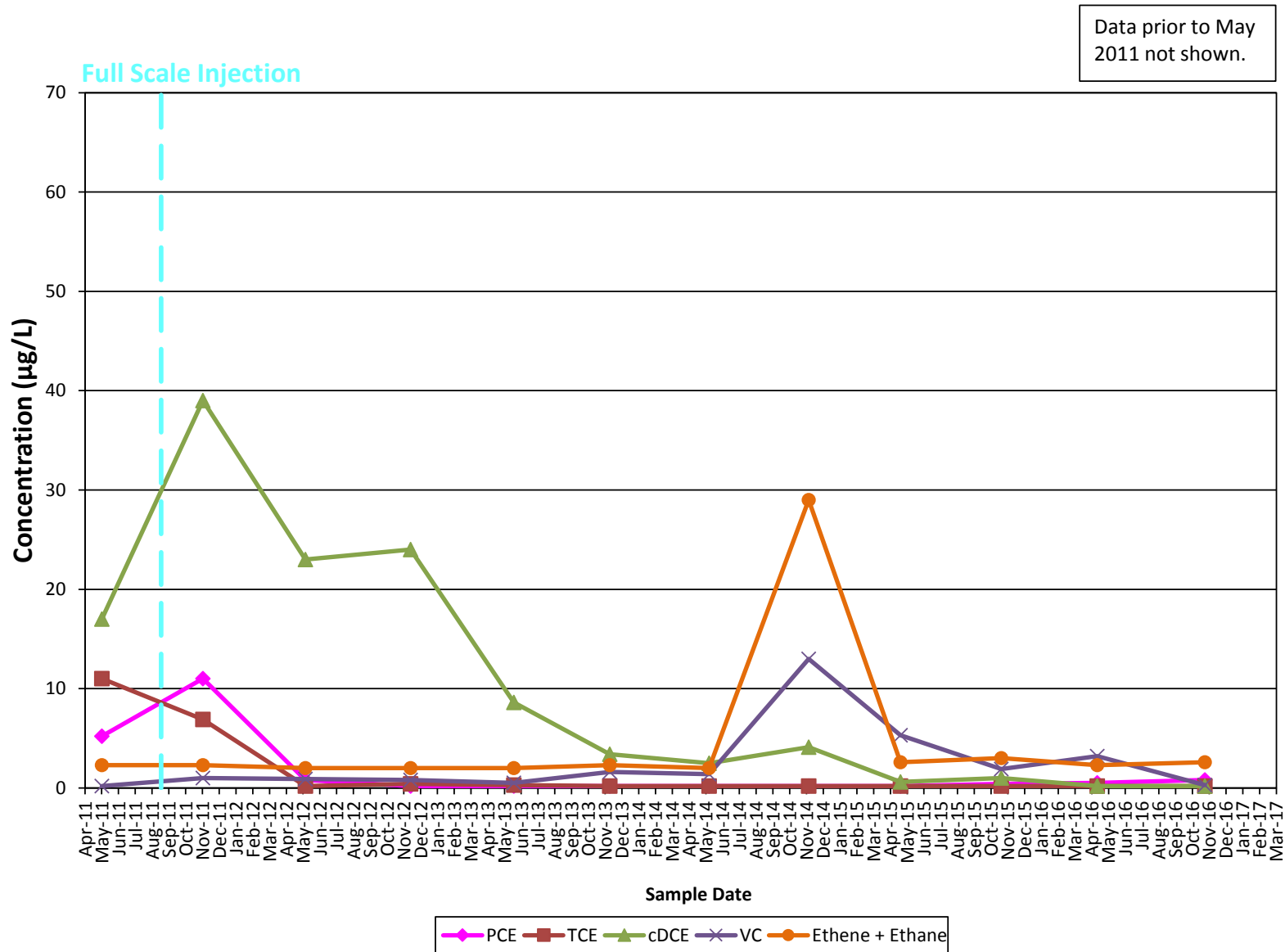




Boeing Developmental Center
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Source Zone Injection Well
BDC-05-02 VOCs

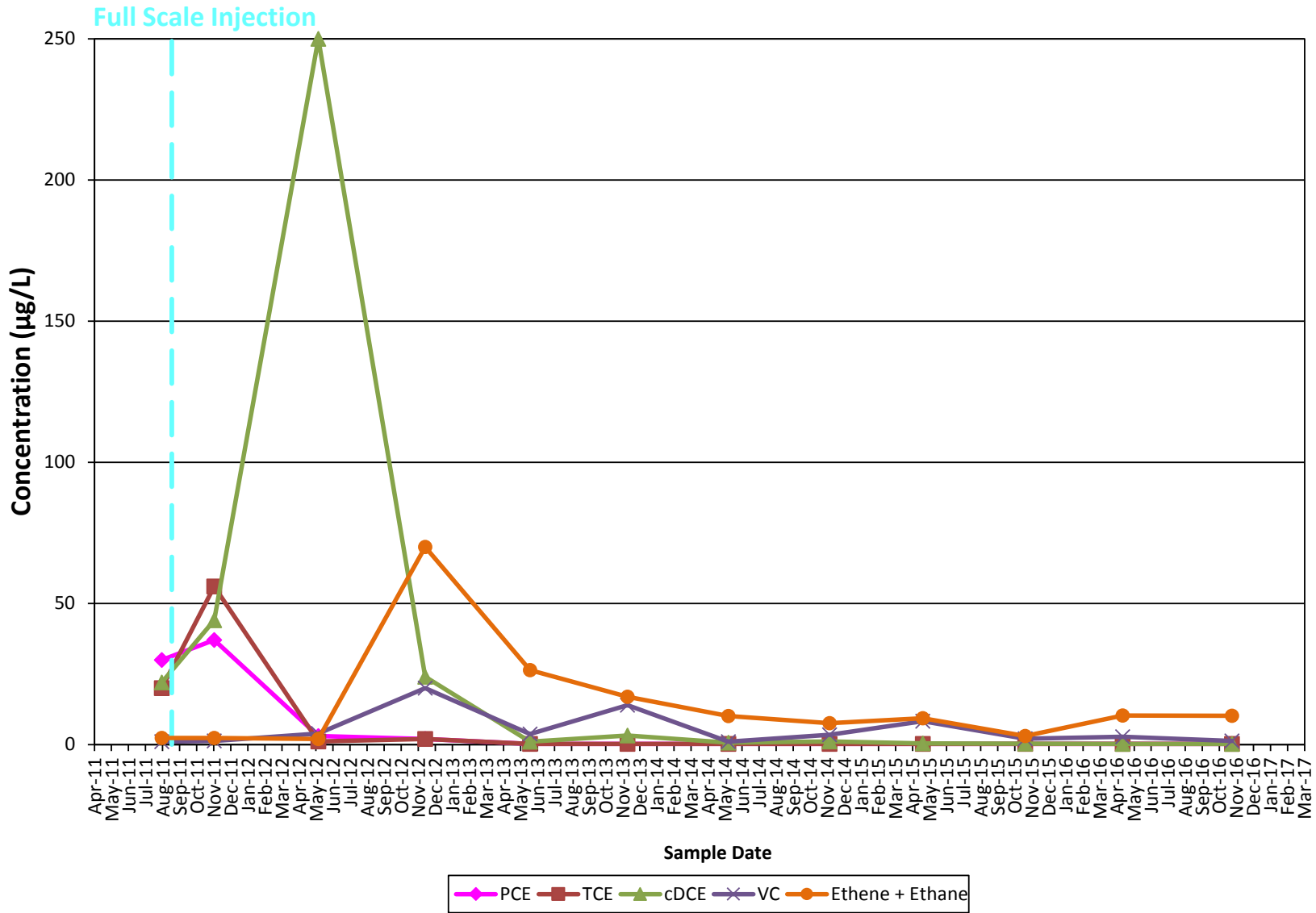
Figure
6



Boeing Developmental Center
Tukwila, Washington

Source Zone Injection Well
BDC-05-07 VOCs

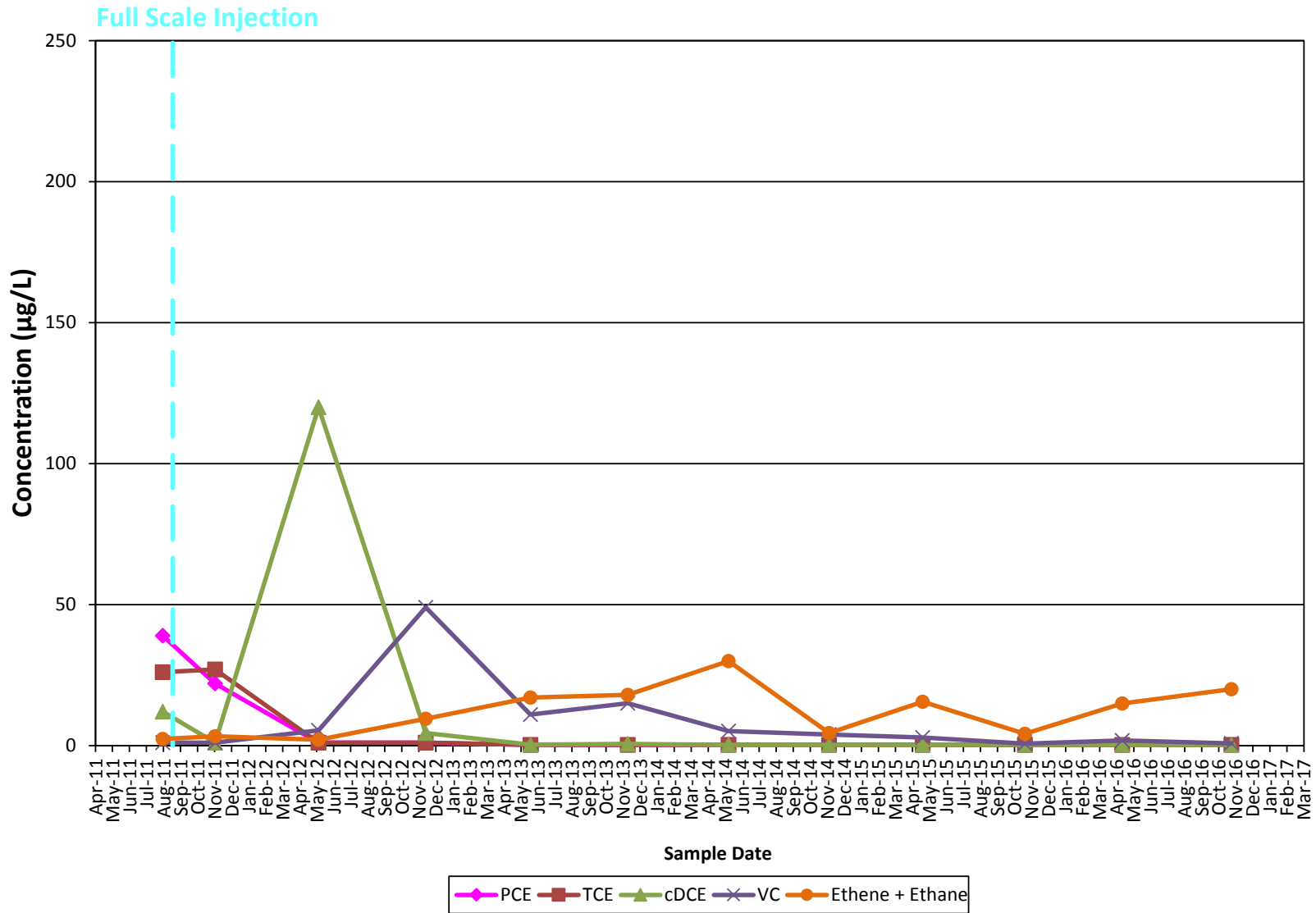
Figure
7



Boeing Developmental Center
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Plume Injection Well
BDC-05-09 VOCs

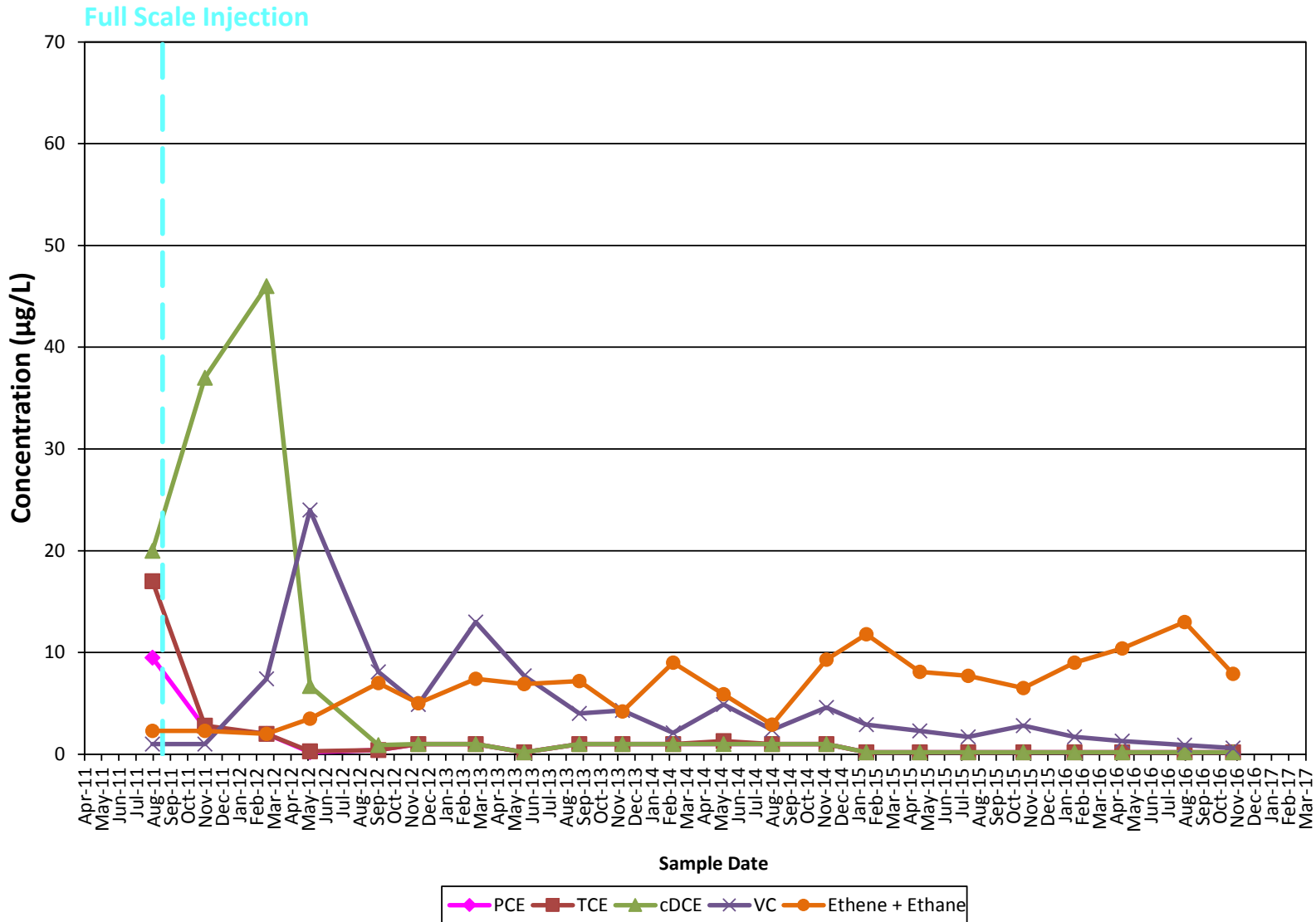
Figure
8



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Plume Injection Well
BDC-05-10 VOCs

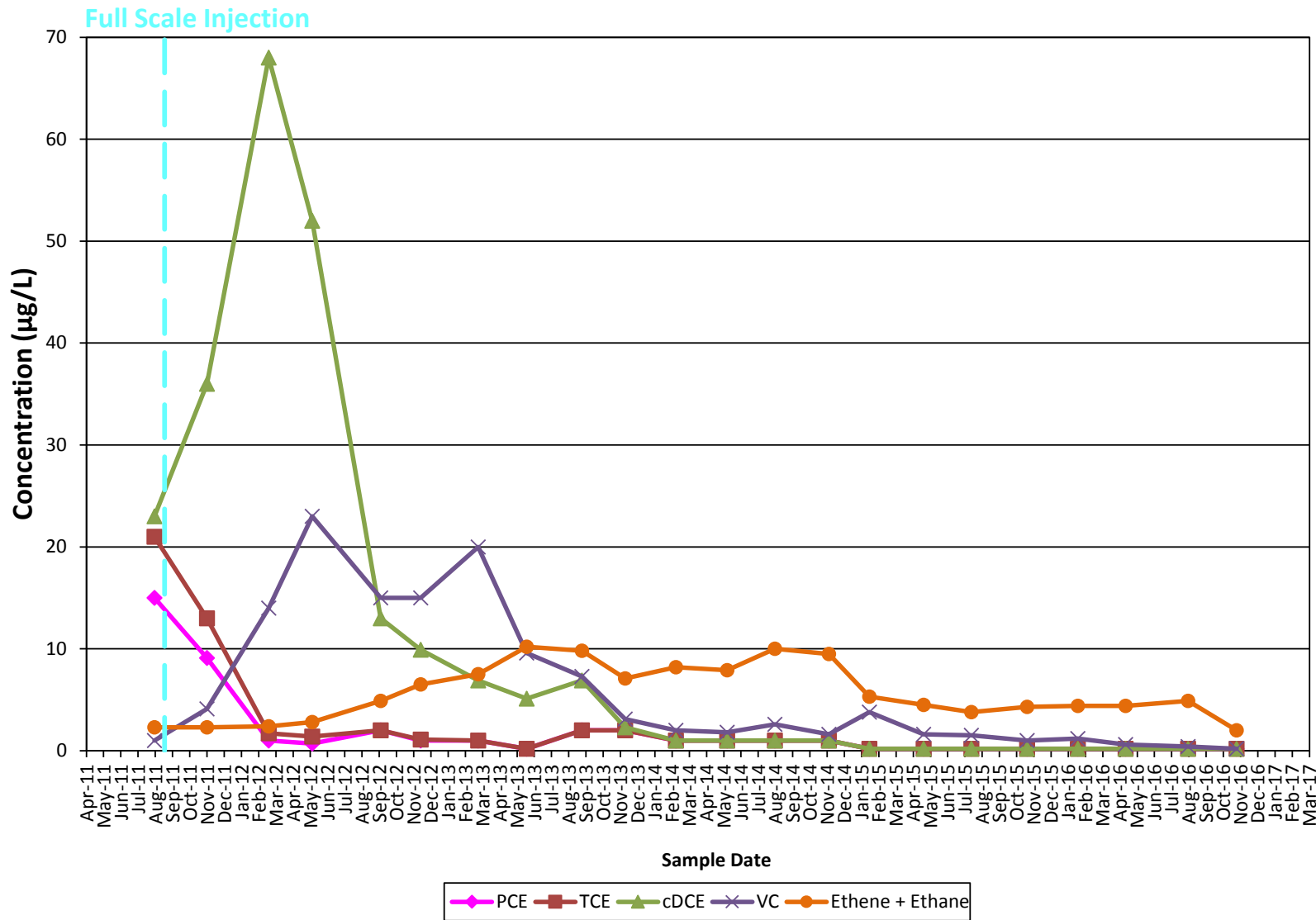
Figure
9



Boeing Developmental Center
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Plume Injection Well
BDC-05-16 VOCs

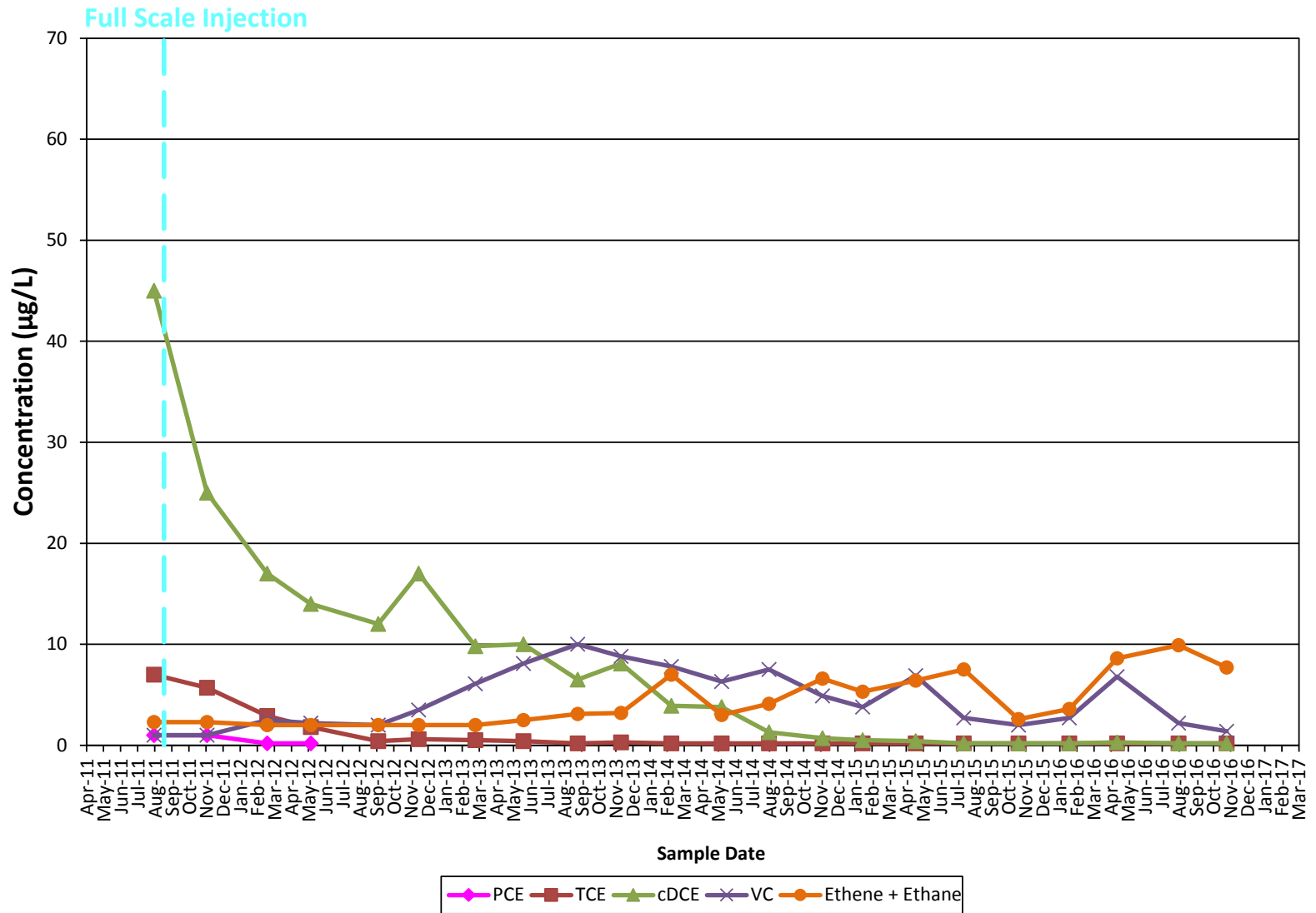
Figure
10



Boeing Developmental Center
Tukwila, Washington

**Monitoring Well
BDC-05-19 VOCs**

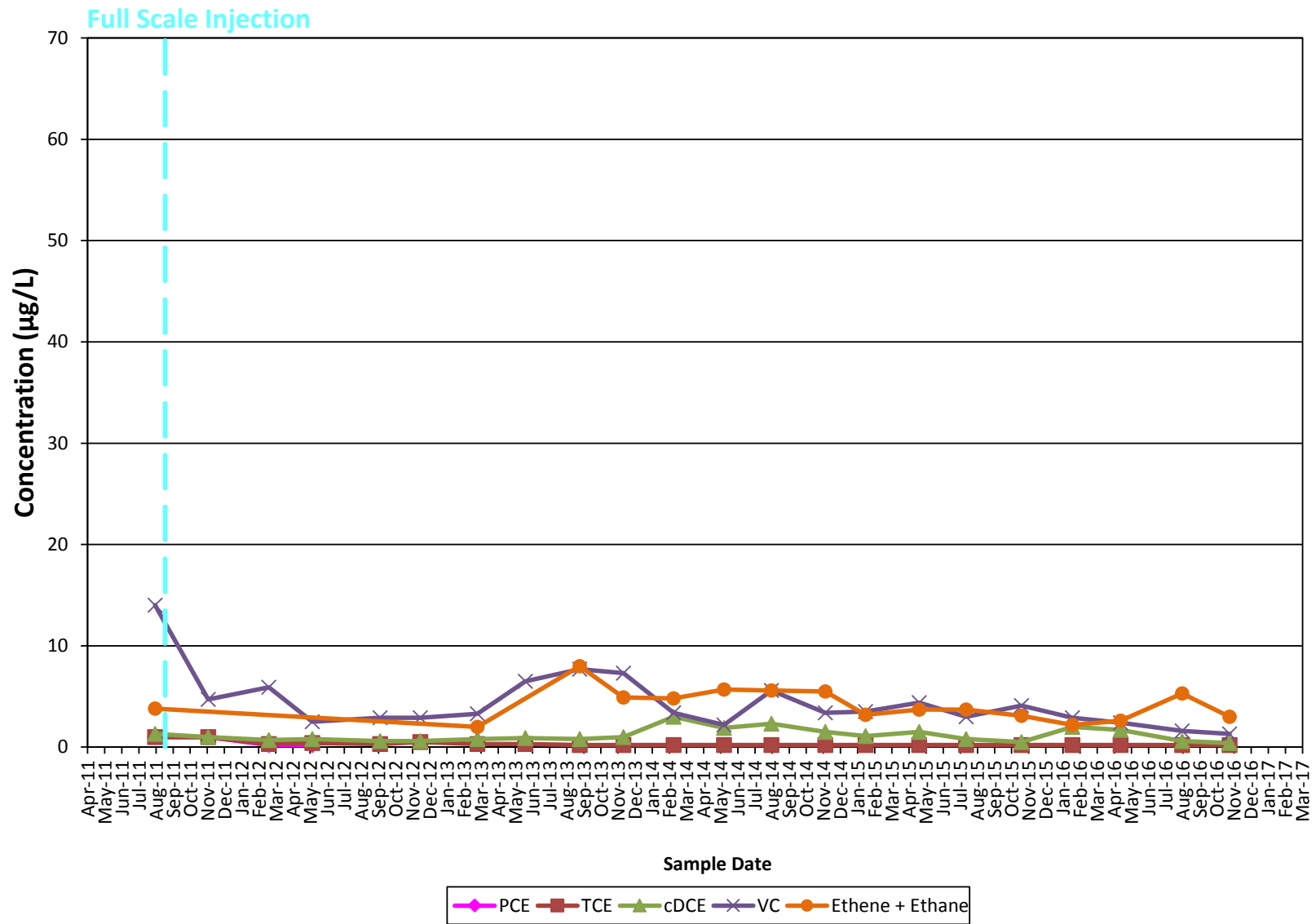
Figure
11



Boeing Developmental Center
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Monitoring Well
BDC-05-20 VOCs

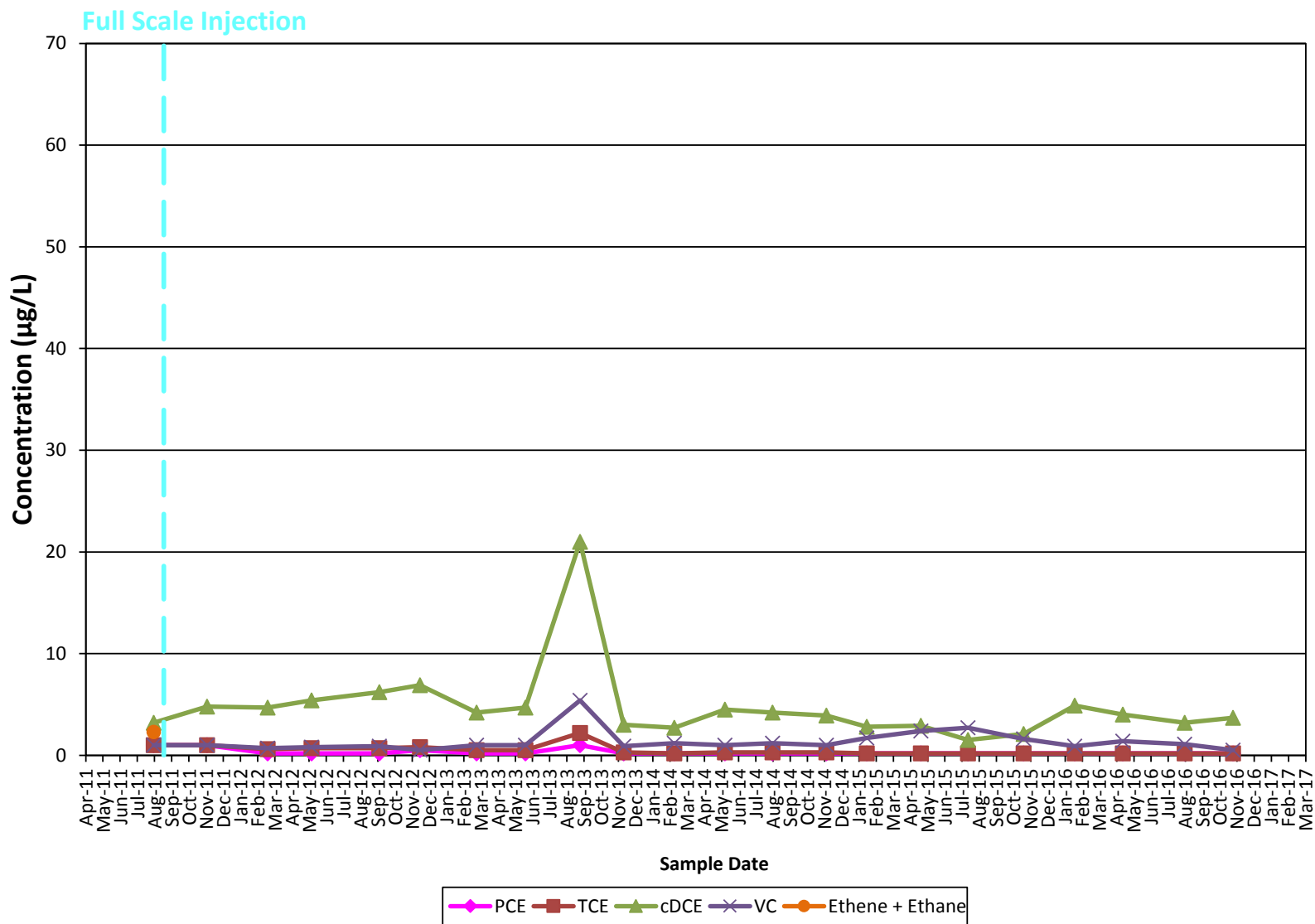
Figure
12



Boeing Developmental Center
Tukwila, Washington

**Monitoring Well
BDC-05-21 VOCs**

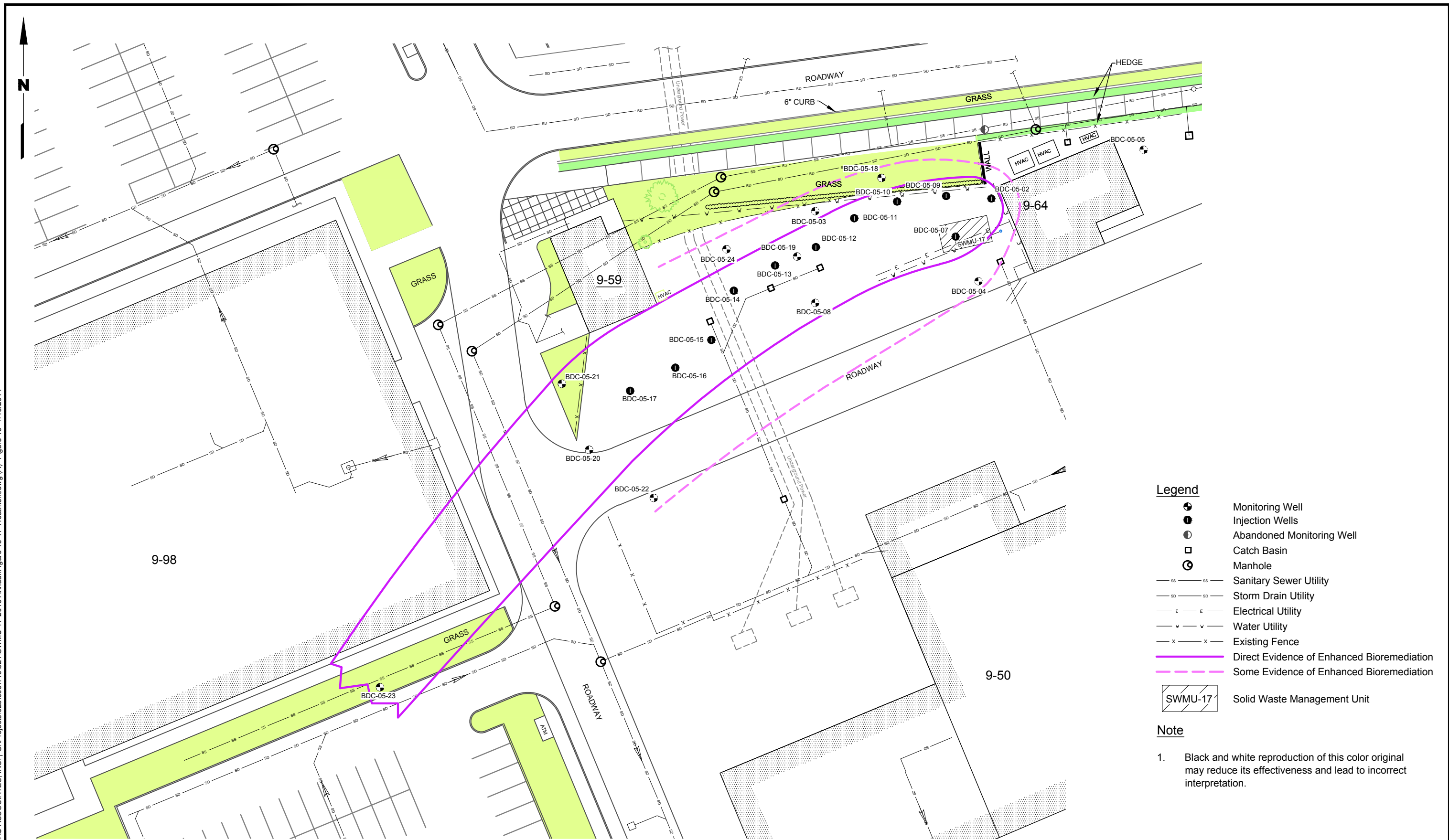
Figure
13



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**Monitoring Well
BDC-05-23 VOCs**

Figure
14

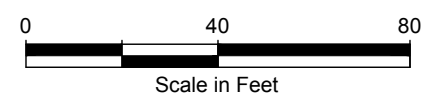


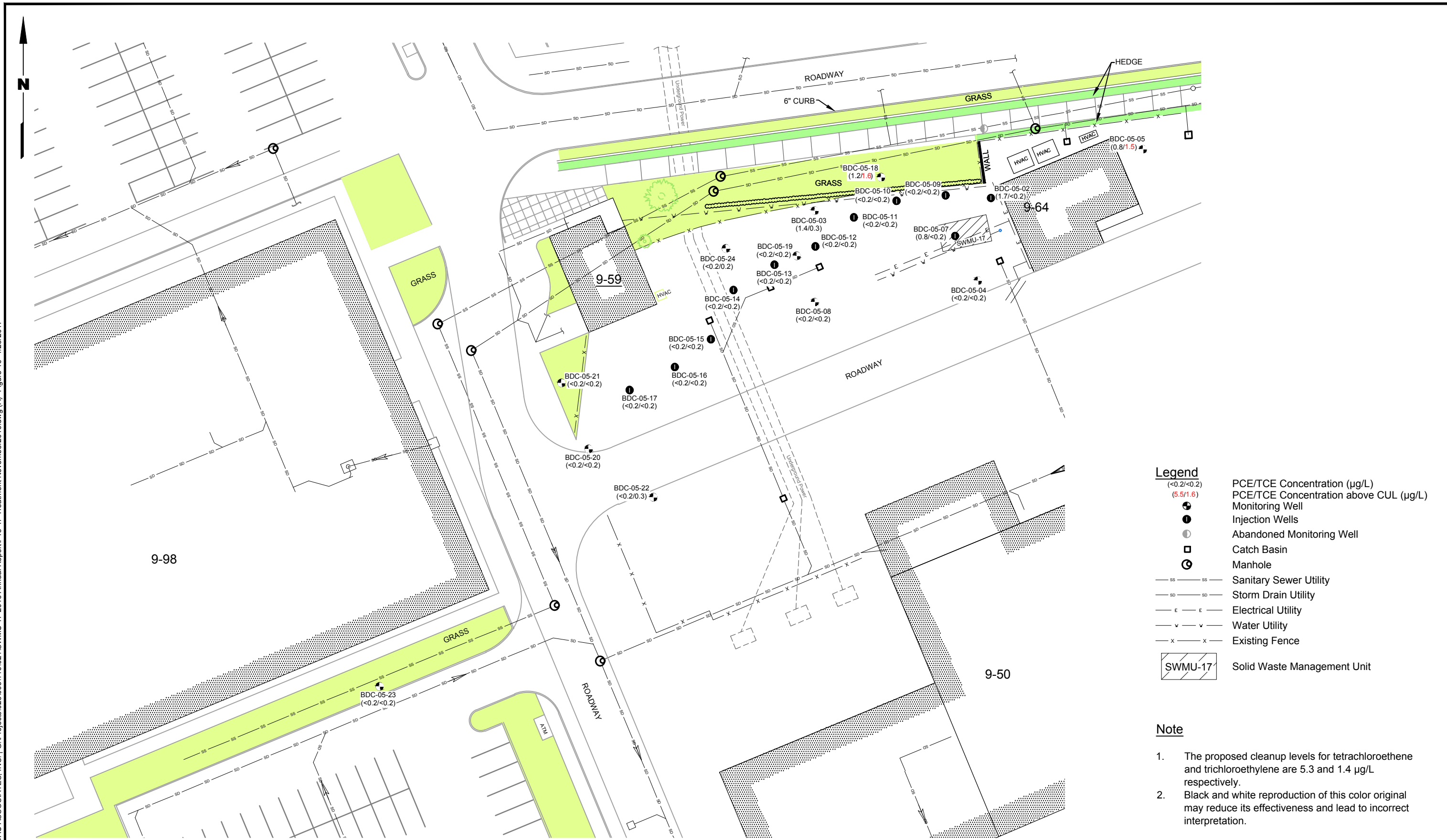
Legend

- Monitoring Well
- Injection Wells
- Abandoned Monitoring Well
- Catch Basin
- ⊙ Manhole
- SS — Sanitary Sewer Utility
- SD — Storm Drain Utility
- E — Electrical Utility
- V — Water Utility
- X — Existing Fence
- Direct Evidence of Enhanced Bioremediation
- Some Evidence of Enhanced Bioremediation
- SWMU-17 Solid Waste Management Unit

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



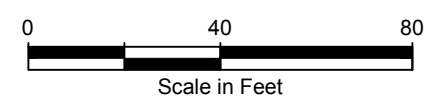


Legend

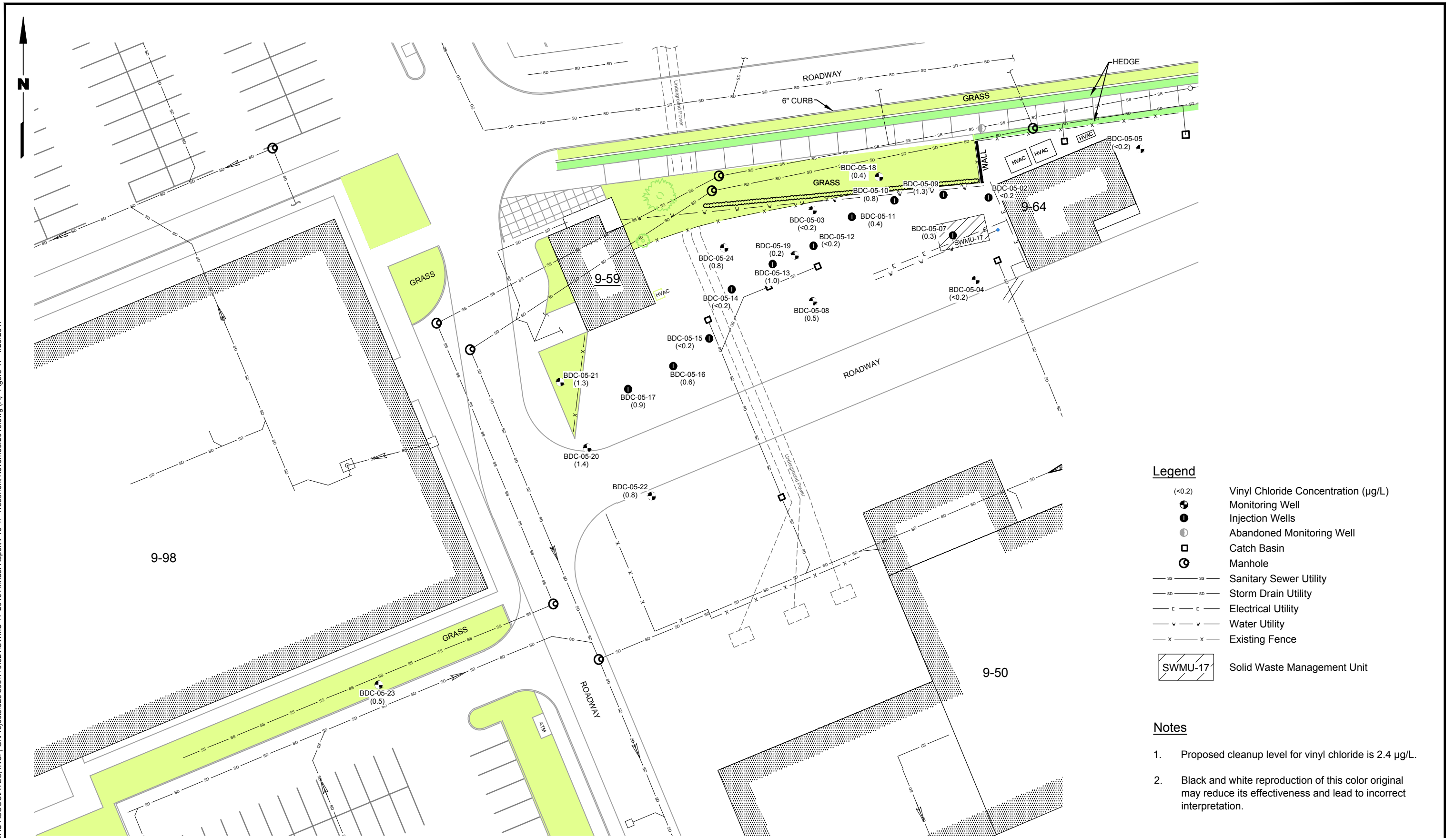
- (0.2/0.2) PCE/TCE Concentration (µg/L)
- (5.5/1.6) PCE/TCE Concentration above CUL (µg/L)
- Monitoring Well
- Injection Wells
- Abandoned Monitoring Well
- Catch Basin
- ⊙ Manhole
- SS — Sanitary Sewer Utility
- SD — Storm Drain Utility
- E — Electrical Utility
- W — Water Utility
- - - Existing Fence
- SWMU-17 Solid Waste Management Unit

Note

- The proposed cleanup levels for tetrachloroethene and trichloroethylene are 5.3 and 1.4 µg/L respectively.
- Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



Boeing Developmental Center Tukwila, Washington	PCE/TCE in Groundwater November 2016	Figure 16
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Legend

- (<0.2) Vinyl Chloride Concentration (µg/L)
- Monitoring Well
- Injection Wells
- Abandoned Monitoring Well
- Catch Basin
- ⊙ Manhole
- SS—SS— Sanitary Sewer Utility
- SD—SD— Storm Drain Utility
- E—E— Electrical Utility
- V—V— Water Utility
- X—X— Existing Fence
- SWMU-17 Solid Waste Management Unit

Notes

1. Proposed cleanup level for vinyl chloride is 2.4 µg/L.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

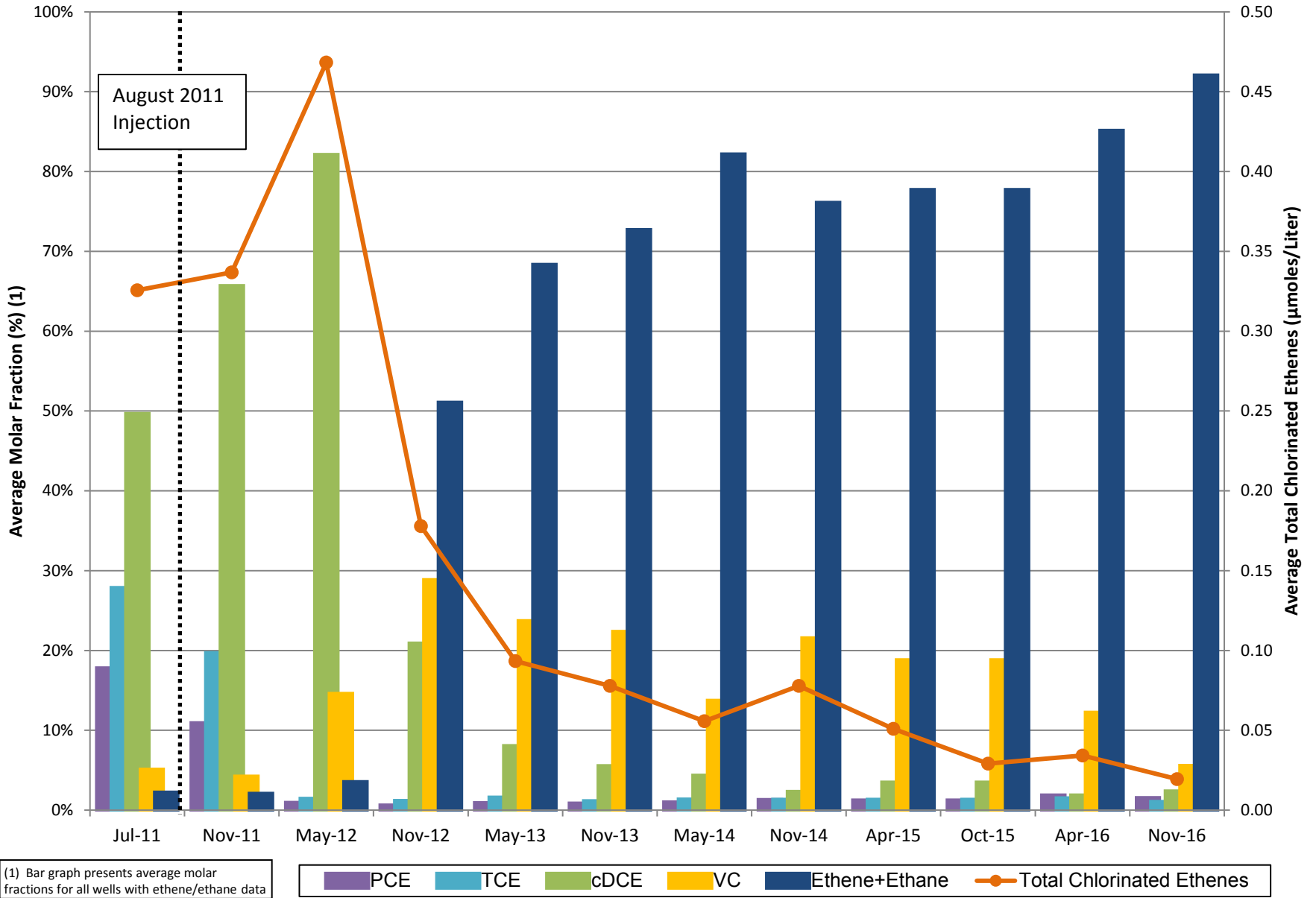


TABLE 1
GROUNDWATER DATA SUMMARY
BOEING DEVELOPMENTAL CENTER SWMU-17

Table with columns for Pilot Injection, Full Injection #1, Volatile Organic Compounds (PCE, TCE, etc.), Metals (As, Cu, etc.), Aquifer Redox Conditions (DO, Nitrate, etc.), Donor Indicators (TOC, pH), VOCs-micromoles/Liter (Total Chloroethenes, etc.), and Molar Fraction (PCE, TCE, etc.). Rows include various well identifiers and dates with corresponding data values.

TABLE 1
GROUNDWATER DATA SUMMARY
BOEING DEVELOPMENTAL CENTER SWMU-17

Well	Date	Pilot Injection Elapsed Time From Injection (days)	Full Injection #1 Elapsed Time From Injection (days)	Volatile Organic Compounds						Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)						Molar Fraction (c)									
				PCE	TCE	c DCE	VC	Ethene	Ethane	Acetylene	As, Tot	As, Dis	Cu, Tot	Cu, Dis	DO	Nitrate	Iron II	Sulfate	Methane	ORP	TOC	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethane + Ethane	PCE	TCE	c DCE	VC	Ethane + Ethane		
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg-N/L)	(mg/L)	(mg/L)	(mg/L)	(mV)	(mg/L)																
Proposed Groundwater Cleanup Levels (a)				5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																							
BDC-05-24 (MW 18 ft XG)	7/31/2011		-18	<1.0	<1.0	1.6	1.6	<1.1	<1.2	<1.1	0.003	0.003	<0.002	<0.002	1.67	<0.1	2.0	1.1	7.6	-7	10.0	7.06															
	11/1/2011		75	<1.0	2.0	4.0	2.2				0.002	0.002	<0.002	<0.002	1.50	<0.1	1.6	0.3		-2.6	8.1	7.06															
	2/19/2012		185	<0.2	0.2	0.7	0.8								0.31	<0.5	1.8	<1.5		63	9.8	6.55															
	5/6/2012		262	<0.2	1.3	2.8	1.0				0.006	0.004	<0.002	<0.002	0.03			0.9		73	9.1	6.60															
	9/5/2012		384	<0.2	1.2	4.0	0.9								0.08		2.0	<0.3		67	7.4	6.67															
	11/15/2012		455	<0.5	<0.5	1.2	<0.5				0.002	0.003	<0.002	<0.002	0.13		1.0	<0.3		-1.7	10.7	6.94															
	2/25/2013		557	<0.2	0.7	5.1	1.9	1.1	<1.2	<1.0					0.10		1.5	1.1	9.1	87	7.2	6.72															
	5/22/2013		643	<0.2	0.8	7.6	2.1				0.004	0.003	<0.002	<0.002	0.58		1.4	0.82		-272	7.4	7.54															
	8/28/2013		741	<0.2	0.5	4.4	1.6	<1.0	1.8	<1.0					0.78		1.4	0.47	11.0	-321	8.6	6.57															
	11/13/2013		818	<0.2	0.4	3.3	1.4	<1.0	1.4	<1.0	0.003	0.003	<0.002	<0.002	2.43		1.3	1.4	11.0	-219	8.7	6.54															
	2/12/2014		909	<0.2	0.2	1.7	0.6	1.1	3.0	<1.0					2.72		2.0	0.81	11.0	-211	7.1	6.76															
	5/12/2014		998	<0.2	0.3	4.8	1.6	1.0	2.3	<1.0	0.003	0.002	<0.002	<0.002	2.58		1.2	0.87	10.0	-196	8.2	6.75															
	8/6/2014		1084	<0.2	0.2	2.8	1.8	3.6	2.3	<1.0					4.02		1.0	0.36	9.6	-167	9.5	7.33															
	11/10/2014		1180	<0.2	<0.2	6.2	12	2.0	<1.0	<1.0	0.001	0.001	<0.002	<0.002	0.05		1.2	1.8	0.97	-86	4.2	6.52															
	1/21/2015		1252	<0.2	0.4	2.1	1.6	2.5	<1.0	<1.0					0.14		2.0	2.3	5.4	-65	3.8	6.31															
	4/27/2015		1348	<0.2	0.5	0.9	2.5	2.5	<1.0	<1.0	0.003	0.003	<0.002	<0.002	0.08		0.8	0.97	3.2	-27	3.2	6.22															
	7/21/2015		1433	<0.2	0.3	1.3	3.9	<1.0	<1.0	<1.0					0.09		1.8	6.2	0.45	-23	2.2	6.27															
	10/28/2015		1532	<0.2	0.5	0.7	1.3	<1.0	<1.0	<1.0	0.003	0.004	<0.002	<0.002	0.47		1.0	5.1	1.4	-3.1	2.9	6.54															
	1/26/2016		1622	<0.2	<0.2	0.4	1.9	<1.0	1.2	<1.0					0.34		1.0	0.43	12.0	-76	8.3	6.47															
	4/20/2016		1707	<0.2	0.2	0.5	0.7	<1.0	1.8	<1.0	0.004	0.002	<0.002	<0.002	0.28			1.3	7.5	-3.8	4.6	6.44															
	8/9/2016		1818	<0.2	0.7	1.9	2.2	3.6	3.6	<1.0	0.005	0.003	<0.002	<0.002	0.15			2.2	6.0	-34.6	2.6	5.85															
	11/3/2016		1904	<0.2	0.2	0.7	0.8	1.9	1.3	<1.0	0.002	0.002	<0.002	<0.002	0.34		1.8	0.80	12.0	-86.4	4.9	5.95															
PCE = tetrachloroethene				Dis = dissolved						IW = Injection Well				Box = exceedance of proposed cleanup level																							
TCE = trichloroethene				DO = dissolved oxygen						MW = Monitoring Well																											
c DCE = cis-1,2-dichloroethene				ORP = oxidation reduction potential						DG = Downgradient; distance from nearest injection well																											
VC = vinyl chloride				TOC = total organic carbon						UG = Upgradient; distance from nearest injection well																											
As = arsenic				NA = not applicable, not available						XG = Crossgradient; distance from nearest injection well																											
Cu = copper				µg/L = micrograms per liter						not analyzed																											
Tot = total				mg/L = milligrams per liter						= Highlights the predominant ethene																											
(a) Proposed Cleanup Standards and Comparison to Site Data, Boeing Developmental Center, Tukwila, Washington (Landau Associates, 5/7/13).																																					
(b) Calculated by dividing the concentration in groundwater by the molecular weight of the compound. Reporting limits for non-detect results replaced with zero.																																					
(c) Indicates the fraction of total ethenes (PCE+TCE+cDCE+VC+ethene/ethane) due to each individual compound on a molar basis.																																					
(d) Sum of PCE, TCE, cDCE, and VC.																																					
Injection Dates:																																					
10/28/2008		Pilot Injection: BDC-05-02 only																																			
8/18/2011		Full Injection #1: BDC-05-02, BDC-05-07, and BDC-05-09 through BDC-05-17; performed 8/15/11-8/18/11																																			
2/19/12 = LU 1290782, 1291166																																					
NOTES:																																					
VOC Molar Fraction - ethane and ethene should be considered together - if E+E is highest molar fraction then highlight both.																																					
Highlight two compounds if they are within 2% of each other																																					

TABLE 2
BIOREMEDIATION GROUNDWATER MONITORING MATRIX (REVISED 5/2013)
BOEING DEVELOPMENTAL CENTER SMWU-17

	Quarterly	Semiannual	Explanation
Injection Wells			
02	(a) (b)	(a) (b) (c)	head of plume
07		(a) (b) (c)	location of former UST
09		(a) (b) (c)	core of plume
10		(a) (b) (c)	core of plume
11		(a) (b) (c)	core of plume
12	(a) (b)	(a) (b) (c)	core of plume
13		(a) (b) (c)	core of plume
14		(a) (b) (c)	core of plume
15		(a) (b) (c)	core of plume
16	(a) (b)	(a) (b) (c)	core of plume
17		(a) (b) (c)	core of plume
Monitoring Wells			
03		(a) (b) (c)	downgradient
04		(a) (c)	crossgradient
05		(a) (c)	upgradient
08		(a) (c)	crossgradient
18	(a) (b)	(a) (b) (c)	crossgradient
19	(a) (b)	(a) (b) (c)	downgradient
20	(a) (b)	(a) (b) (c)	downgradient
21	(a) (b)	(a) (b) (c)	crossgradient
22	(a)	(a) (c)	crossgradient
23	(a)	(a) (c)	downgradient
24	(a) (b)	(a) (b) (c)	crossgradient

UST = underground storage tank

(a) Laboratory Parameters (method): Volatile Organic Compounds (VOCs) Short List (8260) - tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cDCE), vinyl chloride (VC), total organic carbon (TOC; SM5310C), sulfate (E300).

Field Parameters: Fe²⁺, pH, dissolved oxygen (DO), oxygen reduction potential (ORP), temperature.

(b) Laboratory Parameters (method): Methane/Ethane/Ethene/Acetylene (RSK-175).

(c) Laboratory Parameters (method): total (nonfiltered) and dissolved (field filtered) copper (3010A) and arsenic (200.8 ICP-MS).

NOTE: Changes to original monitoring matrix are shown in red.

Laboratory Reports

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

February 05, 2016

Project: Boeing_DC:SWMU-17 qrt

Submittal Date: 01/27/2016

Group Number: 1626626

State of Sample Origin: WA

<u>Client Sample Description</u>	<u>Lancaster Labs (LL) #</u>
BDC-05-16-160126 Water	8221083
BDC-05-16-160126 Water	8221084
BDC-05-18-160126 Water	8221085
BDC-05-18-160126 Water	8221086
BDC-05-21-160126 Water	8221087
BDC-05-21-160126 Water	8221088
BDC-05-23-160126 Water	8221089
BDC-05-23-160126 Water	8221090
BDC-05-22-160126 Water	8221091
BDC-05-22-160126 Water	8221092
BDC-05-20-160126 Water	8221093
BDC-05-20-160126 Water	8221094
BDC-05-24-160126 Water	8221095
BDC-05-24-160126 Water	8221096
BDC-05-19-160126 Water	8221097
BDC-05-19-160126 Water	8221098
BDC-05-12-160126 Water	8221099
BDC-05-12-160126 Water	8221100
BDC-05-02-160126 Water	8221101
BDC-05-02-160126 Water	8221102
BDC-05-DUP-160126 Water	8221103
BDC-05-DUP-160126 Water	8221104
Trip Blank Water	8221105

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

ELECTRONIC The Boeing Company
COPY TO
ELECTRONIC Landau
COPY TO

Attn: Lindsey E. Mahrt

Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Boeing_DC:SWMU-17 qrt
LL Group #: 1626626

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:**RSKSOP-175 modified, GC Miscellaneous**

Batch #: 160280014A (Sample number(s): 8221084, 8221086, 8221088, 8221094, 8221096, 8221098, 8221100, 8221102, 8221104 UNSPK: 8221084)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Methane

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: Methane

Sample Description: BDC-05-16-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221083
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 06:10 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD16-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.7	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	23.7	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160294AA	01/30/2016 03:31	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160294AA	01/30/2016 03:31	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 03:31	James S Mathiot	1

Sample Description: BDC-05-16-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221084
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 06:10 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD16H

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	8.0		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	18,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	200 U		200	200
07105	Ethane	74-84-0	200 U		200	200
07105	Ethene	74-85-1	200 U		200	200
07105	Methane	74-82-8	21,000		600	200
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 10:46	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 14:39	Johanna C Kennedy	200
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 18:16	Drew M Gerhart	1

Sample Description: BDC-05-18-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221085
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 06:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD18-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	1.3	0.2	1
11996	Tetrachloroethene	127-18-4	2.2	0.2	1
11996	Trichloroethene	79-01-6	2.9	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	1.8	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160294AA	01/30/2016 03:52	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160294AA	01/30/2016 03:52	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 04:11	James S Mathiot	1

Sample Description: BDC-05-18-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221086
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 06:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD18H

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	170	3.0	1
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	5.4	0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 11:41	Johanna C Kennedy	1
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 18:48	Drew M Gerhart	1

Sample Description: BDC-05-21-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221087
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 07:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30

Reported: 02/05/2016 18:31

BD21-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	2.0	ug/l 0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	2.9	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	13.8	mg/l 1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160294AA	01/30/2016 05:33	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160294AA	01/30/2016 05:33	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 04:24	James S Mathiot	1

Sample Description: BDC-05-21-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221088
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 07:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD21H

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.2 J	1.0	1
07105	Methane	74-82-8	2,100 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	10 U	10	10
07105	Ethane	74-84-0	10 U	10	10
07105	Ethene	74-85-1	10 U	10	10
07105	Methane	74-82-8	2,500	30	10
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	1.4	0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 12:00	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 14:57	Johanna C Kennedy	10
00228	Sulfate	EPA 300.0	1	16027667601B	01/27/2016 22:35	Drew M Gerhart	1

Sample Description: BDC-05-23-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221089
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 07:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD23-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	4.9	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.9	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	7.8	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160294AA	01/30/2016 05:54	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160294AA	01/30/2016 05:54	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 04:51	James S Mathiot	1

Sample Description: BDC-05-23-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221090
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 07:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30

Reported: 02/05/2016 18:31

BD23H

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 2.2	mg/l 0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 20:24	Drew M Gerhart	1

Sample Description: BDC-05-22-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221091
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 08:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30

Reported: 02/05/2016 18:31

BD22-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	7.1	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.9	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	6.8	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160294AA	01/30/2016 06:14	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160294AA	01/30/2016 06:14	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 05:05	James S Mathiot	1

Sample Description: BDC-05-22-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221092
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 08:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30

Reported: 02/05/2016 18:31

BD22H

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 8.5	mg/l 0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 21:28	Drew M Gerhart	1

Sample Description: BDC-05-20-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221093
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 08:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30

Reported: 02/05/2016 18:31

BD20-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	0.2	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	2.7	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	9.9	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160322AA	02/01/2016 23:06	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160322AA	02/01/2016 23:06	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 05:18	James S Mathiot	1

Sample Description: BDC-05-20-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221094
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 08:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD20H

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.5 J	1.0	1
07105	Ethene	74-85-1	2.1 J	1.0	1
07105	Methane	74-82-8	9,100 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	11,000	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 12:18	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 15:17	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 22:00	Drew M Gerhart	1

Sample Description: BDC-05-24-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221095
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 09:20 by CH

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Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD24-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	0.4	ug/l 0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.9	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	8.3	mg/l 1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160322AA	02/01/2016 23:27	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160322AA	02/01/2016 23:27	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 05:31	James S Mathiot	1

Sample Description: BDC-05-24-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221096
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 09:20 by CH

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD24H

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.2 J	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	9,300 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	12,000	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.43 J	0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 12:36	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 15:36	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16027667601B	01/27/2016 23:14	Drew M Gerhart	1

Sample Description: BDC-05-19-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221097
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 09:45 by CH

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MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD19-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.2	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	25.9	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160322AA	02/01/2016 23:47	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160322AA	02/01/2016 23:47	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 05:44	James S Mathiot	1

Sample Description: BDC-05-19-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221098
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 09:45 by CH

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MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD19H

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	3.4 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	16,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	18,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 12:55	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 15:55	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 22:32	Drew M Gerhart	1

Sample Description: BDC-05-12-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221099
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 10:15 by CH

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MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30

Reported: 02/05/2016 18:31

BD12-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.8	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	32.7	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160322AA	02/02/2016 00:07	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160322AA	02/02/2016 00:07	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049501B	01/28/2016 05:58	James S Mathiot	1

Sample Description: BDC-05-12-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221100
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 10:15 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD12H

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	4.3 J		1.0	1
07105	Ethene	74-85-1	1.3 J		1.0	1
07105	Methane	74-82-8	15,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	19,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 13:32	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 16:13	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 23:04	Drew M Gerhart	1

Sample Description: BDC-05-02-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221101
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 10:45 by CH

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MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD02-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	1.4	0.2	1
11996	Tetrachloroethene	127-18-4	4.9	0.2	1
11996	Trichloroethene	79-01-6	1.7	0.2	1
11996	Vinyl Chloride	75-01-4	1.8	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	20.9	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160322AA	02/02/2016 00:28	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160322AA	02/02/2016 00:28	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049502A	01/28/2016 06:52	James S Mathiot	1

Sample Description: BDC-05-02-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221102
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 10:45 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD02H

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	5.5	1.0	1
07105	Ethene	74-85-1	2.1 J	1.0	1
07105	Methane	74-82-8	7,600 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	10,000	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	23.7	3.0	10

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 13:50	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 16:32	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16027667121B	01/27/2016 23:52	Drew M Gerhart	10

Sample Description: BDC-05-DUP-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221103
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD-D-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.2	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	25.9	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160322AA	02/02/2016 00:48	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160322AA	02/02/2016 00:48	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16028049502A	01/28/2016 07:32	James S Mathiot	1

Sample Description: BDC-05-DUP-160126 Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221104
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/26/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30
Reported: 02/05/2016 18:31

BD-DH

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	3.4 J		1.0	1
07105	Ethene	74-85-1	1.1 J		1.0	1
07105	Methane	74-82-8	15,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	21,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160280014A	01/28/2016 14:17	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160280014A	01/28/2016 17:10	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16027667121B	01/28/2016 00:40	Drew M Gerhart	1

Sample Description: Trip Blank Water
Boeing_DC:SWMU-17 qrt

LL Sample # WW 8221105
LL Group # 1626626
Account # 13419

Project Name: Boeing_DC:SWMU-17 qrt

Collected: 01/05/2016

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 01/27/2016 10:30

Reported: 02/05/2016 18:31

BD-T-

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	5.0 U	5.0	1
07105	Ethane	74-84-0	5.0 U	5.0	1
07105	Ethene	74-85-1	5.0 U	5.0	1
07105	Methane	74-82-8	5.1	5.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H160322AA	02/01/2016 22:46	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160322AA	02/01/2016 22:46	Matthew S Krause	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160290007A	01/29/2016 10:41	Johanna C Kennedy	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/05/2016 18:31

Group Number: 1626626

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ
	ug/l	ug/l
Batch number: H160294AA	Sample number(s):	8221083,8221085,8221087,8221089,8221091
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Batch number: H160322AA	Sample number(s):	8221093,8221095,8221097,8221099,8221101,8221103,8221105
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Batch number: 160290007A	Sample number(s):	8221105
Acetylene	5.0 U	5.0
Ethane	5.0 U	5.0
Ethene	5.0 U	5.0
Methane	5.0 U	5.0
Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 160280014A	Sample number(s):	8221084,8221086,8221088,8221094,8221096,8221098,8221100,8221102,8221104
Acetylene	1.0 U	1.0
Ethane	1.0 U	1.0
Ethene	1.0 U	1.0
Methane	3.0 U	3.0
Analysis Name	Result	LOQ
	mg/l	mg/l
Batch number: 16028049501B	Sample number(s):	8221083,8221085,8221087,8221089,8221091,8221093,8221095,8221097,8221099
Total Organic Carbon	1.0 U	1.0
Batch number: 16028049502A	Sample number(s):	8221101,8221103
Total Organic Carbon	1.0 U	1.0
Analysis Name	Result	MDL
	mg/l	mg/l
Batch number: 16027667121B	Sample number(s):	8221084,8221086,8221090,8221092,8221094,8221098,8221100,8221102,8221104
Sulfate	0.30 U	0.30
Batch number: 16027667601B	Sample number(s):	8221088,8221096
Sulfate	0.30 U	0.30

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/05/2016 18:31

Group Number: 1626626

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: H160294AA	Sample number(s): 8221083,8221085,8221087,8221089,8221091								
cis-1,2-Dichloroethene	5.00	5.34	5.00	5.09	107	102	80-120	5	30
Tetrachloroethene	5.00	5.24	5.00	5.47	105	109	80-120	4	30
Trichloroethene	5.00	5.40	5.00	5.18	108	104	80-120	4	30
Vinyl Chloride	5.00	5.25	5.00	5.12	105	102	71-123	2	30
Batch number: H160322AA	Sample number(s): 8221093,8221095,8221097,8221099,8221101,8221103,8221105								
cis-1,2-Dichloroethene	5.00	4.80	5.00	4.90	96	98	80-120	2	30
Tetrachloroethene	5.00	5.14	5.00	5.18	103	104	80-120	1	30
Trichloroethene	5.00	4.84	5.00	4.87	97	97	80-120	1	30
Vinyl Chloride	5.00	4.66	5.00	4.71	93	94	71-123	1	30
Batch number: 160290007A	Sample number(s): 8221105								
Acetylene	51	56.06	51	57.69	110	113	79-126	3	20
Ethane	59.2	59.05	59.2	60.33	100	102	85-115	2	20
Ethene	60.4	61.27	60.4	62.6	101	104	83-115	2	20
Methane	61.3	66	61.3	68.61	108	112	85-115	4	20
Batch number: 160280014A	Sample number(s): 8221084,8221086,8221088,8221094,8221096,8221098,8221100,8221102,8221104								
Acetylene	51	55.31	51	57.69	108	107	79-126		
Ethane	59.2	58.28	59.2	60.33	98	98	85-115		
Ethene	60.4	59.51	60.4	62.6	99	99	83-115		
Methane	61.3	65.31	61.3	68.61	107	107	85-115		
Batch number: 16028049501B	Sample number(s): 8221083,8221085,8221087,8221089,8221091,8221093,8221095,8221097,8221099								
Total Organic Carbon	25	25.37	25	25.37	101	101	91-113		
Batch number: 16028049502A	Sample number(s): 8221101,8221103								
Total Organic Carbon	25	25.35	25	25.35	101	101	91-113		
Batch number: 16027667121B	Sample number(s): 8221084,8221086,8221090,8221092,8221094,8221098,8221100,8221102,8221104								
Sulfate	7.50	7.31	7.50	7.31	97	97	90-110		
Batch number: 16027667601B	Sample number(s): 8221088,8221096								
Sulfate	7.50	7.46	7.50	7.46	99	99	90-110		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/05/2016 18:31

Group Number: 1626626

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 160280014A	Sample number(s): 8221084,8221086,8221088,8221094,8221096,8221098,8221100,8221102,8221104 UNSPK: 8221084									
Acetylene	1.0 U	51	52.31	51	53.83	103	106	79-126	3	20
Ethane	8.01	59.2	61.38	59.2	65.98	90	98	74-131	7	30
Ethene	1.0 U	60.4	63.96	60.4	68.19	106	113	72-133	6	30
Methane	17804.31	61.3	11966.92	61.3	16636.71	-9522 (2)	-1904 (2)	73-125	33*	30
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16028049501B	Sample number(s): 8221083,8221085,8221087,8221089,8221091,8221093,8221095,8221097,8221099 UNSPK: 8221083									
Total Organic Carbon	23.69	10	33.09			94		91-113		
Batch number: 16028049502A	Sample number(s): 8221101,8221103 UNSPK: 8221101									
Total Organic Carbon	20.87	10	30.6			97		91-113		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16027667121B	Sample number(s): 8221084,8221086,8221090,8221092,8221094,8221098,8221100,8221102,8221104 UNSPK: 8221086									
Sulfate	5.40	10	15.2			98		90-110		
Batch number: 16027667601B	Sample number(s): 8221088,8221096 UNSPK: P221016									
Sulfate	15.28	50	68.93			107		90-110		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 16028049501B	Sample number(s): 8221083,8221085,8221087,8221089,8221091,8221093,8221095,8221097,8221099 BKG: 8221083			
Total Organic Carbon	23.69	23.45	1	3
Batch number: 16028049502A	Sample number(s): 8221101,8221103 BKG: 8221101			
Total Organic Carbon	20.87	20.73	1	3
	mg/l	mg/l		
Batch number: 16027667121B	Sample number(s): 8221084,8221086,8221090,8221092,8221094,8221098,8221100,8221102,8221104 BKG: 8221086			
Sulfate	5.40	5.36	1	15
Batch number: 16027667601B	Sample number(s): 8221088,8221096 BKG: P221016			
Sulfate	15.28	15.07	1 (1)	15

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/05/2016 18:31

Group Number: 1626626

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H160294AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8221083	103	94	96	94
8221085	104	97	97	93
8221087	100	93	98	92
8221089	100	92	99	92
8221091	104	96	97	95
Blank	101	94	97	94
LCS	104	102	94	97
LCSD	97	91	101	95
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H160322AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8221093	96	89	104	90
8221095	96	88	105	89
8221097	99	91	104	92
8221099	97	90	103	90
8221101	104	100	97	93
8221103	102	94	99	92
8221105	94	92	107	90
Blank	99	92	101	90
LCS	101	94	100	96
LCSD	103	95	100	95
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 160280014A

Propene	
8221084	93
8221084DL	98
8221086	95
8221088	89
8221088DL	93
8221094	93
8221094DL	99
8221096	90
8221096DL	98
8221098	89
8221098DL	99
8221100	91
8221100DL	101
8221102	88
8221102DL	99
8221104	92
8221104DL	106

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/05/2016 18:31

Group Number: 1626626

	Propene
Blank	104
LCS	99
MS	86
MSD	86

Limits: 44-123

Analysis Name: AMEE by RSK-175
Batch number: 160290007A

	Propene
8221105	99
Blank	102
LCS	99
LCSD	100

Limits: 44-123

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Boeing Chain of Custody



Lancaster Laboratories

Acct. # 13419

Group # 1626626

For Eurofins Lancaster Laboratories use only
Sample # 221083-105
Please print. Instructions on reverse side correspond.

1 Client Information		2 Sample Identification		3 Collected		4		5		6		
Site Location: <u>BOEING</u>		Sample Identification	Date	Time	Matrix	No. of Containers	Analyses Requested			Remarks/Comments	Date/Time	
Site Project: <u>DEV. CTR</u>							38	57	91			55
Site Program/#: <u>SWMU-17 SHORT LIST 52nd EXHIBIT</u>		7		7		7		7		7		
Boeing PM: <u>NAME BET</u>		7		7		7		7		7		
Consultant Contact: <u>LANDAU</u>		7		7		7		7		7		
Report To: <u>LANDAU</u>		7		7		7		7		7		
Invoice To: <input checked="" type="checkbox"/> Boeing EHS <input type="checkbox"/> Other (specify):		7		7		7		7		7		
Sampler: <u>CHARLES HARDY</u>		7		7		7		7		7		
		7		7		7		7		7		
	<u>BDC-05-16-160126</u>	<u>Ag</u>	<u>610</u>	<u>Ag</u>	<u>9</u>	<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>MISS Fe²⁺</u>	<u>7</u>
	<u>BDC-05-18-160126</u>	<u>Ag</u>	<u>650</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>1.4 mg/L Fe²⁺</u>	<u>7</u>
	<u>BDC-05-21-160126</u>	<u>Ag</u>	<u>725</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>1.3 mg/L Fe²⁺</u>	<u>7</u>
	<u>BDC-05-23-160126</u>	<u>Ag</u>	<u>755</u>	<u>Ag</u>	<u>7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>1.0 mg/L Fe²⁺</u>	<u>7</u>
	<u>BDC-05-22-160126</u>	<u>Ag</u>	<u>820</u>	<u>Ag</u>	<u>7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>1.3 mg/L Fe²⁺</u>	<u>7</u>
	<u>BDC-05-20-160126</u>	<u>Ag</u>	<u>850</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>1.1 mg/L Fe²⁺</u>	<u>7</u>
	<u>BDC-05-24-160126</u>	<u>Ag</u>	<u>920</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>1.4 mg/L Fe²⁺</u>	<u>7</u>
	<u>BDC-05-19-160126</u>	<u>Ag</u>	<u>945</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>7</u>
	<u>BDC-05-12-160126</u>	<u>Ag</u>	<u>1015</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>7</u>
	<u>BDC-05-02-160126</u>	<u>Ag</u>	<u>1045</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>7</u>
	<u>BDC-05-DUP-160126</u>	<u>Ag</u>	<u>---</u>	<u>Ag</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>7</u>
	<u>TRIP BLANKS</u>	<u>Ag</u>	<u>---</u>	<u>Ag</u>	<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>7</u>

Relinquished by: [Signature] Date/Time: 1-26-2016 12:30
 Relinquished by: [Signature] Date/Time: 1-26-2016 12:30
 Relinquished by: [Signature] Date/Time: 1-27-16 10:30
 Relinquished by commercial carrier (circle): LTD carrier
 Temperature upon Receipt: _____ °C
 Custody Seals Intact?: Yes No

Client: Boeing

Delivery and Receipt Information

Delivery Method: SeaTac Arrival Timestamp: 01/27/2016 10:30
 Number of Packages: 2 Number of Projects: 1

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	No
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	4
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Timothy Cubberley (6520) at 11:45 on 01/27/2016

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	0.2	DT	Wet	Y	Bagged	N
2	DT131	0.4	DT	Wet	Y	Bagged	N

Sample Date/Time Discrepancy Details

Sample ID on COC	Date/Time on Label	Comments
BDC-05-20 Water-160126	1/26/2016 08:55	Time on COC marked at 08:50. Oly 3 vials marked wrong.

General Comments: Missing a cooler.

1626626

Part # 162237-2277
82279041 01/26 54011/0661/2277

SHIP DATE: 26JAN16
ACTWT: 89.00 LB
CAD: 70FFC1621
DIMS: 29x15x10 IN
BILL SENDER

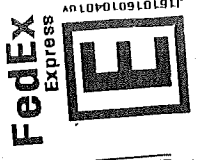
ORIGIN ID:SEAA

UNITED STATES US

TO **SAMPLE RECEIVING**
EUROFINS
2425 NEW HOLLAND PIKE

LANCASTER PA 17601
REF: (717) 656-2300

DEPT:

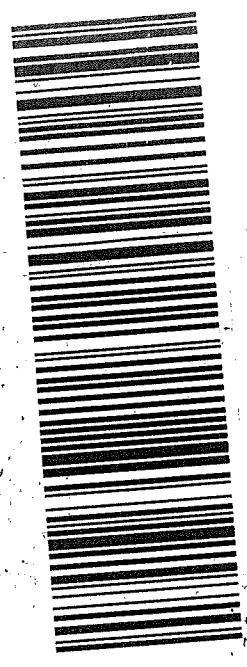


WED - 27 JAN 10:30A
PRIORITY OVERNIGHT

TRK# 8047 1333 3280
0667

XH LNSA

17601
PA-US MDT



Part # 155237-433
857997 01/26 54011/0661/2277

SHIP DATE: 26JAN16
ACTWT: 45.10 LB
CAD: 70SI1621
DIMS: 25x13x13 IN
BILL SENDER

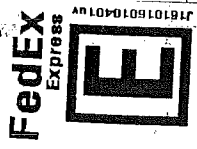
ORIGIN ID:SEAA

UNITED STATES US

TO **SAMPLE RECEIVING**
EUROFINS LANCASTER LABS
2425 NEW HOLLAND PIKE

LANCASTER PA 17601
REF: (717) 656-7323

DEPT:

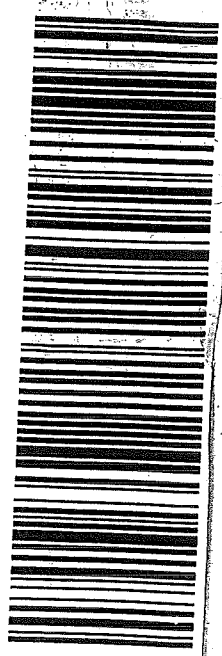


WED - 27 JAN 10:30A
PRIORITY OVERNIGHT

TRK# 8047 1333 3290
0667

XH LNSA

17601
PA-US MDT



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m³	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Report Date: May 05, 2016

Project: Boeing_DC:SWMU-17 s-ann

Submittal Date: 04/22/2016

Group Number: 1653597

State of Sample Origin: WA

<u>Client Sample Description</u>	Lancaster Labs <u>(LL) #</u>
BDC-05-17-160420 Water	8347287
BDC-05-17-160420 Water	8347288
BDC-05-17-160420 Total Metals Water	8347289
BDC-05-17-160420 Total Metals Water	8347290
BDC-05-17-160420 Dissolved Metals Water	8347291
BDC-05-17-160420 Dissolved Metals Water	8347292
BDC-05-16-160420 Water	8347293
BDC-05-16-160420 Water	8347294
BDC-05-16-160420 Total Metals Water	8347295
BDC-05-16-160420 Total Metals Water	8347296
BDC-05-16-160420 Dissolved Metals Water	8347297
BDC-05-16-160420 Dissolved Metals Water	8347298
BDC-05-18-160420 Water	8347299
BDC-05-18-160420 Water	8347300
BDC-05-18-160420 Total Metals Water	8347301
BDC-05-18-160420 Total Metals Water	8347302
BDC-05-18-160420 Dissolved Metals Water	8347303
BDC-05-18-160420 Dissolved Metals Water	8347304
BDC-05-15-160420 Water	8347305
BDC-05-15-160420 Water	8347306
BDC-05-15-160420 Total Metals Water	8347307
BDC-05-15-160420 Total Metals Water	8347308
BDC-05-15-160420 Dissolved Metals Water	8347309
BDC-05-15-160420 Dissolved Metals Water	8347310
BDC-05-14-160420 Water	8347311
BDC-05-14-160420 Water	8347312
BDC-05-14-160420 Total Metals Water	8347313
BDC-05-14-160420 Total Metals Water	8347314
BDC-05-14-160420 Dissolved Metals Water	8347315
BDC-05-14-160420 Dissolved Metals Water	8347316
BDC-05-24-160420 Water	8347317
BDC-05-24-160420 Water	8347318

BDC-05-24-160420 Total Metals Water	8347319
BDC-05-24-160420 Total Metals Water	8347320
BDC-05-24-160420 Dissolved Metals Water	8347321
BDC-05-24-160420 Dissolved Metals Water	8347322
BDC-05-13-160420 Water	8347323
BDC-05-13-160420 Water	8347324
BDC-05-13-160420 Total Metals Water	8347325
BDC-05-13-160420 Total Metals Water	8347326
BDC-05-13-160420 Dissolved Metals Water	8347327
BDC-05-13-160420 Dissolved Metals Water	8347328
BDC-05-19-160420 Water	8347329
BDC-05-19-160420 Water	8347330
BDC-05-19-160420 Total Metals Water	8347331
BDC-05-19-160420 Total Metals Water	8347332
BDC-05-19-160420 Dissolved Metals Water	8347333
BDC-05-19-160420 Dissolved Metals Water	8347334
BDC-05-12-160420 Water	8347335
BDC-05-12-160420 Water	8347336
BDC-05-12-160420 Total Metals Water	8347337
BDC-05-12-160420 Total Metals Water	8347338
BDC-05-12-160420 Dissolved Metals Water	8347339
BDC-05-12-160420 Dissolved Metals Water	8347340
BDC-05-03-160420 Water	8347341
BDC-05-03-160420 Water	8347342
BDC-05-03-160420 Total Metals Water	8347343
BDC-05-03-160420 Total Metals Water	8347344
BDC-05-03-160420 Dissolved Metals Water	8347345
BDC-05-03-160420 Dissolved Metals Water	8347346
BDC-05-11-160420 Water	8347347
BDC-05-11-160420 Water	8347348
BDC-05-11-160420 Total Metals Water	8347349
BDC-05-11-160420 Total Metals Water	8347350
BDC-05-11-160420 Dissolved Metals Water	8347351
BDC-05-11-160420 Dissolved Metals Water	8347352
BDC-05-10-160420 Water	8347353
BDC-05-10-160420 Water	8347354
BDC-05-10-160420 Total Metals Water	8347355
BDC-05-10-160420 Total Metals Water	8347356
BDC-05-10-160420 Dissolved Metals Water	8347357
BDC-05-10-160420 Dissolved Metals Water	8347358
BDC-05-09-160420 Water	8347359
BDC-05-09-160420 Water	8347360
BDC-05-09-160420 Total Metals Water	8347361
BDC-05-09-160420 Total Metals Water	8347362
BDC-05-09-160420 Dissolved Metals Water	8347363
BDC-05-09-160420 Dissolved Metals Water	8347364
BDC-05-07-160420 Water	8347365
BDC-05-07-160420 Water	8347366
BDC-05-07-160420 Total Metals Water	8347367
BDC-05-07-160420 Total Metals Water	8347368
BDC-05-07-160420 Dissolved Metals Water	8347369
BDC-05-07-160420 Dissolved Metals Water	8347370

BDC-05-02-160420 Water	8347371
BDC-05-02-160420 Water	8347372
BDC-05-02-160420 Total Metals Water	8347373
BDC-05-02-160420 Total Metals Water	8347374
BDC-05-02-160420 Dissolved Metals Water	8347375
BDC-05-02-160420 Dissolved Metals Water	8347376
BDC-05-DUP1-160420 Water	8347377
BDC-05-DUP1-160420 Water	8347378
BDC-05-DUP1-160420 Total Metals Water	8347379
BDC-05-DUP1-160420 Total Metals Water	8347380
BDC-05-DUP1-160420 Dissolved Metals Water	8347381
BDC-05-DUP1-160420 Dissolved Metals Water	8347382
BDC-05-23-160421 Water	8347383
BDC-05-23-160421 Water	8347384
BDC-05-23-160421 Total Metals Water	8347385
BDC-05-23-160421 Total Metals Water	8347386
BDC-05-23-160421 Dissolved Metals Water	8347387
BDC-05-23-160421 Dissolved Metals Water	8347388
BDC-05-21-160421 Water	8347389
BDC-05-21-160421 Water	8347390
BDC-05-21-160421 Total Metals Water	8347391
BDC-05-21-160421 Total Metals Water	8347392
BDC-05-21-160421 Dissolved Metals Water	8347393
BDC-05-21-160421 Dissolved Metals Water	8347394
BDC-05-22-160421 Water	8347395
BDC-05-22-160421 Water	8347396
BDC-05-22-160421 Total Metals Water	8347397
BDC-05-22-160421 Total Metals Water	8347398
BDC-05-22-160421 Dissolved Metals Water	8347399
BDC-05-22-160421 Dissolved Metals Water	8347400
BDC-05-20-160421 Water	8347401
BDC-05-20-160421 Water	8347402
BDC-05-20-160421 Total Metals Water	8347403
BDC-05-20-160421 Total Metals Water	8347404
BDC-05-20-160421 Dissolved Metals Water	8347405
BDC-05-20-160421 Dissolved Metals Water	8347406
BDC-05-08-160421 Water	8347407
BDC-05-08-160421 Water	8347408
BDC-05-08-160421 Total Metals Water	8347409
BDC-05-08-160421 Total Metals Water	8347410
BDC-05-08-160421 Dissolved Metals Water	8347411
BDC-05-08-160421 Dissolved Metals Water	8347412
BDC-05-04-160421 Water	8347413
BDC-05-04-160421 Water	8347414
BDC-05-04-160421 Total Metals Water	8347415
BDC-05-04-160421 Total Metals Water	8347416
BDC-05-04-160421 Dissolved Metals Water	8347417
BDC-05-04-160421 Dissolved Metals Water	8347418
BDC-05-05-160421 Water	8347419
BDC-05-05-160421 Water	8347420
BDC-05-05-160421 Total Metals Water	8347421
BDC-05-05-160421 Total Metals Water	8347422

BDC-05-05-160421 Dissolved Metals Water	8347423
BDC-05-05-160421 Dissolved Metals Water	8347424
BDC-05-DUP2-160421 Water	8347425
BDC-05-DUP2-160421 Water	8347426
BDC-05-DUP2-160421 Total Metals Water	8347427
BDC-05-DUP2-160421 Total Metals Water	8347428
BDC-05-DUP2-160421 Dissolved Metals Water	8347429
BDC-05-DUP2-160421 Dissolved Metals Water	8347430
Trip Blank Water	8347431
Trip Blank Water	8347432

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

Electronic Copy To The Boeing Company
Electronic Copy To Landau

Attn: Lindsey E. Mahrt
Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Boeing_DC:SWMU-17 s-ann
LL Group #: 1653597

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:**RSKSOP-175 modified, GC Miscellaneous**

Batch #: 161170006A (Sample number(s): 8347288, 8347294, 8347300, 8347306, 8347312, 8347318, 8347324, 8347330, 8347336, 8347342, 8347348, 8347354, 8347360, 8347366, 8347372, 8347378, 8347390, 8347402, 8347426, 8347432 UNSPK: 8347288)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Methane

EPA 200.8 rev 5.4, Metals

Batch #: 161177050003A (Sample number(s): 8347319-8347322, 8347325-8347328, 8347427-8347428 UNSPK: 8347319 BKG: 8347319)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161177050004A (Sample number(s): 8347337-8347340, 8347343-8347346, 8347429-8347430 UNSPK: 8347337 BKG: 8347337)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161177050007A (Sample number(s): 8347301-8347304, 8347331-8347334 UNSPK: 8347301 BKG: 8347301)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161207050006A (Sample number(s): 8347391-8347392, 8347397-8347400, 8347403-8347406 UNSPK: 8347391 BKG: 8347391)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161207050007A (Sample number(s): 8347393-8347394, 8347409-8347412, 8347415-8347418 UNSPK: 8347393 BKG: 8347393)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161207050008A (Sample number(s): 8347421-8347424 UNSPK: 8347421 BKG: 8347421)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

EPA 200.8 rev 5.4, Metals Dissolved

Batch #: 161177050003A (Sample number(s): 8347319-8347322, 8347325-8347328, 8347427-8347428 UNSPK: 8347319 BKG: 8347319)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161177050004A (Sample number(s): 8347337-8347340, 8347343-8347346, 8347429-8347430 UNSPK: 8347337 BKG: 8347337)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161177050007A (Sample number(s): 8347301-8347304, 8347331-8347334 UNSPK: 8347301 BKG: 8347301)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161207050006A (Sample number(s): 8347391-8347392, 8347397-8347400, 8347403-8347406 UNSPK: 8347391 BKG: 8347391)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161207050007A (Sample number(s): 8347393-8347394, 8347409-8347412, 8347415-8347418 UNSPK: 8347393 BKG: 8347393)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 161207050008A (Sample number(s): 8347421-8347424 UNSPK: 8347421 BKG: 8347421)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Sample Description: BDC-05-17-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347287
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:00 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05171

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	29.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 02:16	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 02:16	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 05:18	James S Mathiot	1

Sample Description: BDC-05-17-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347288
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:00 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05172

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	6.6		1.0	1
07105	Ethene	74-85-1	1.1 J		1.0	1
07105	Methane	74-82-8	17,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	200 U		200	200
07105	Ethane	74-84-0	200 U		200	200
07105	Ethene	74-85-1	200 U		200	200
07105	Methane	74-82-8	19,000		600	200
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 12:51	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 14:08	Johanna C Kennedy	200
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 03:08	Drew M Gerhart	1

Sample Description: BDC-05-17-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347289
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0029	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:00	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-17-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347290
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0421	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:09	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-17-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347291
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:10	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-17-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347292
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0364	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:12	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-16-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347293
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:35 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05161

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.3	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	17.7	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 02:36	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 02:36	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 05:59	James S Mathiot	1

Sample Description: BDC-05-16-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347294
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:35 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

20516

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	9.0		1.0	1
07105	Ethene	74-85-1	1.4 J		1.0	1
07105	Methane	74-82-8	13,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	17,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 20:37	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 14:28	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 03:25	Drew M Gerhart	1

Sample Description: BDC-05-16-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347295
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:35 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0060	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:17	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-16-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347296
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:35 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0423	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:19	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-16-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347297
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:35 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:21	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-16-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347298
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 05:35 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0394	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:22	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-18-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347299
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 06:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05181

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C		ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	1	0.2	1
11996	Tetrachloroethene	127-18-4	2.3	0.2	1
11996	Trichloroethene	79-01-6	3.0	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000		mg/l	
00273	Total Organic Carbon	n.a.	1.0 U	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 02:56	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 02:56	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 06:12	James S Mathiot	1

Sample Description: BDC-05-18-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347300
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 06:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05182

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	320	3.0	1
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	8.5	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 20:56	Johanna C Kennedy	1
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 03:42	Drew M Gerhart	1

Sample Description: BDC-05-18-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347301
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 06:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 01:56	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-18-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347302
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 06:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0026	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 02:04	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-18-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347303
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 06:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 02:06	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-18-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347304
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 06:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0013 J	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 02:08	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-15-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347305
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:05 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05151

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.1	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	27.6	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 03:17	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 03:17	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 06:26	James S Mathiot	1

Sample Description: BDC-05-15-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347306
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:05 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

20515

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	12	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	13,000 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	200 U	200	200
07105	Ethane	74-84-0	200 U	200	200
07105	Ethene	74-85-1	200 U	200	200
07105	Methane	74-82-8	18,000	600	200
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 21:15	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 14:47	Johanna C Kennedy	200
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 04:32	Drew M Gerhart	1

Sample Description: BDC-05-15-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347307
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:05 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 18:51	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-15-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347308
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:05 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0570	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 18:59	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-15-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347309
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:05 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:01	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-15-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347310
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:05 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0507	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:03	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-14-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347311
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:45 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05141

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles					
		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.3	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.9	0.2	1
Wet Chemistry					
		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	22.3	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 03:37	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 03:37	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 06:39	James S Mathiot	1

Sample Description: BDC-05-14-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347312
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:45 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05142

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.7 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	8,300 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	11,000		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	3.1		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 21:34	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 15:06	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 04:49	Drew M Gerhart	1

Sample Description: BDC-05-14-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347313
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:45 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:08	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-14-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347314
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:45 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0157	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:10	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-14-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347315
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:45 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:11	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-14-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347316
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 07:45 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0161	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:14	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-24-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347317
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 08:40 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05241

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.5	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2	0.2	1
11996	Vinyl Chloride	75-01-4	0.7	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	4.6	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 03:57	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 03:57	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 06:53	James S Mathiot	1

Sample Description: BDC-05-24-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347318
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 08:40 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05242

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.8 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	5,200 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	7,500		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	1.3		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 21:52	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 15:26	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 05:05	Drew M Gerhart	1

Sample Description: BDC-05-24-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347319
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 08:40 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 17:43	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-24-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347320
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 08:40 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0041	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 17:52	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-24-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347321
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 08:40 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 17:53	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-24-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347322
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 08:40 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0023	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 17:55	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-13-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347323
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05131

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	2.0	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	7.6	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 04:17	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 04:17	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 07:21	James S Mathiot	1

Sample Description: BDC-05-13-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347324
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05132

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	2.0 J	1.0	1
07105	Ethene	74-85-1	1.9 J	1.0	1
07105	Methane	74-82-8	7,800 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	10,000	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 22:11	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 15:45	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 05:22	Drew M Gerhart	1

Sample Description: BDC-05-13-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347325
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 18:00	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-13-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347326
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0257	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 18:02	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-13-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347327
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 18:03	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-13-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347328
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0238	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 18:05	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-19-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347329
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05191

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.6	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	21.3	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 04:38	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 04:38	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 07:34	James S Mathiot	1

Sample Description: BDC-05-19-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347330
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05192

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0	U	1.0	1
07105	Ethane	74-84-0	3.4	J	1.0	1
07105	Ethene	74-85-1	1.0	U	1.0	1
07105	Methane	74-82-8	13,000	E	3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	100
07105	Ethane	74-84-0	100	U	100	100
07105	Ethene	74-85-1	100	U	100	100
07105	Methane	74-82-8	19,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.36	J	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 22:30	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 16:04	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 05:39	Drew M Gerhart	1

Sample Description: BDC-05-19-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347331
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:50 by CH

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MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0028	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 02:13	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-19-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347332
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:50 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0249	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 02:15	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-19-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347333
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:50 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 02:16	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-19-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347334
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 09:50 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0206	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050007A	05/01/2016 02:18	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050007	04/28/2016 08:03	James L Mertz	1

Sample Description: BDC-05-12-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347335
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05121

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.4	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	14.3	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 04:58	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 04:58	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 07:48	James S Mathiot	1

Sample Description: BDC-05-12-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347336
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:20 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05122

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	4.3 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	12,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	16,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 22:49	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 16:24	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 06:29	Drew M Gerhart	1

Sample Description: BDC-05-12-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347337
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:07	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-12-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347338
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0158	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:16	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-12-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347339
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:17	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-12-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347340
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:20 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0165	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:19	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-03-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347341
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05031

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C		ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	1.2	0.2	1
11996	Trichloroethene	79-01-6	0.2	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000		mg/l	
00273	Total Organic Carbon	n.a.	1.4	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 05:18	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 05:18	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501A	04/28/2016 08:01	James S Mathiot	1

Sample Description: BDC-05-03-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347342
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05032

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	2,100 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	20 U	20	20
07105	Ethane	74-84-0	20 U	20	20
07105	Ethene	74-85-1	20 U	20	20
07105	Methane	74-82-8	2,800	60	20
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	6.5	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 23:08	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 17:03	Johanna C Kennedy	20
00228	Sulfate	EPA 300.0	1	16114667603A	04/24/2016 06:46	Drew M Gerhart	1

Sample Description: BDC-05-03-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347343
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0033	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:24	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-03-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347344
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0019 J	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:26	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-03-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347345
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:27	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-03-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347346
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 10:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0023	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:29	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-11-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347347
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05111

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.4	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	6.5	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161203AA	04/30/2016 05:39	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161203AA	04/30/2016 05:39	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 08:15	James S Mathiot	1

Sample Description: BDC-05-11-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347348
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05112

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	2.6 J		1.0	1
07105	Ethene	74-85-1	3.3 J		1.0	1
07105	Methane	74-82-8	11,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	13,000		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/26/2016 23:26	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 17:22	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 12:21	Drew M Gerhart	1

Sample Description: BDC-05-11-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347349
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 09:54	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-11-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347350
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0199	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 10:04	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-11-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347351
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 10:05	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-11-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347352
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0202	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 10:07	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-10-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347353
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05101

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.8	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	5.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 11:24	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 11:24	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 08:55	James S Mathiot	1

Sample Description: BDC-05-10-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347354
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05102

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	11	1.0	1
07105	Ethene	74-85-1	3.9 J	1.0	1
07105	Methane	74-82-8	4,500 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	20 U	20	20
07105	Ethane	74-84-0	20 U	20	20
07105	Ethene	74-85-1	20 U	20	20
07105	Methane	74-82-8	5,800	60	20
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.65 J	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 00:04	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 17:42	Johanna C Kennedy	20
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 13:02	Drew M Gerhart	1

Sample Description: BDC-05-10-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347355
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 10:13	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-10-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347356
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0153	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 10:14	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-10-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347357
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 10:16	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-10-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347358
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 11:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0156	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050005A	04/28/2016 10:18	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050005	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-09-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347359
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05091

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	2.8	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	2.8	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 11:45	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 11:45	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 09:09	James S Mathiot	1

Sample Description: BDC-05-09-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347360
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05092

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	8.4	1.0	1
07105	Ethene	74-85-1	1.9 J	1.0	1
07105	Methane	74-82-8	5,300 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	6,600	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 00:23	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 18:01	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 13:16	Drew M Gerhart	1

Sample Description: BDC-05-09-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347361
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:07	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-09-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347362
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0073	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:18	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-09-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347363
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:23	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-09-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347364
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0088	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:25	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-07-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347365
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

10507

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2	0.2	1
11996	Tetrachloroethene	127-18-4	0.5	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	3.2	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	3.8	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 12:05	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 12:05	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 09:23	James S Mathiot	1

Sample Description: BDC-05-07-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347366
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:50 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05072

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.0 U		1.0	1
07105	Ethene	74-85-1	1.3 J		1.0	1
07105	Methane	74-82-8	3,900 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	20 U		20	20
07105	Ethane	74-84-0	20 U		20	20
07105	Ethene	74-85-1	20 U		20	20
07105	Methane	74-82-8	5,400		60	20
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	2.0		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 00:42	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 18:20	Johanna C Kennedy	20
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 13:30	Drew M Gerhart	1

Sample Description: BDC-05-07-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347367
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:50 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 11:49	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-07-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347368
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:50 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0031	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 11:58	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-07-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347369
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:50 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 12:00	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-07-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347370
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 12:50 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0030	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 12:01	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347371
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 13:15 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05021

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	0.8	0.2	1
11996	Tetrachloroethene	127-18-4	4.2	0.2	1
11996	Trichloroethene	79-01-6	1.4	0.2	1
11996	Vinyl Chloride	75-01-4	0.6	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	13.6	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 12:25	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 12:25	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 09:51	James S Mathiot	1

Sample Description: BDC-05-02-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347372
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 13:15 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05022

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified		ug/l		
07105	Acetylene	74-86-2	1.0 U	1.0	1	
07105	Ethane	74-84-0	4.4 J	1.0	1	
07105	Ethene	74-85-1	1.0 U	1.0	1	
07105	Methane	74-82-8	5,600 E	3.0	1	
Trial ID: DL						
07105	Acetylene	74-86-2	50 U	50	50	
07105	Ethane	74-84-0	50 U	50	50	
07105	Ethene	74-85-1	50 U	50	50	
07105	Methane	74-82-8	8,800	150	50	
Wet Chemistry		EPA 300.0		mg/l		
00228	Sulfate	14808-79-8	14.5	0.30	1	

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 01:01	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 18:40	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 14:11	Drew M Gerhart	1

Sample Description: BDC-05-02-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347373
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 13:15 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0083	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 12:07	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347374
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 13:15 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0049	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 12:09	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347375
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 13:15 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
06033	Metals Dissolved Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0036	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 12:10	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347376
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 13:15 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0022	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050006A	04/28/2016 12:12	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050006	04/27/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-DUP1-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347377
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

05D11

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.6	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2	0.2	1
11996	Vinyl Chloride	75-01-4	1.0	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	4.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 12:46	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 12:46	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 10:04	James S Mathiot	1

Sample Description: BDC-05-DUP1-160420 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347378
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05D12

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	2.0 J	1.0	1
07105	Ethene	74-85-1	1.0 J	1.0	1
07105	Methane	74-82-8	5,800 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	7,500	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.89 J	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 01:20	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 19:03	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 14:25	Drew M Gerhart	1

Sample Description: BDC-05-DUP1-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347379
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:24	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-DUP1-160420 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347380
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0043	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050001A	05/01/2016 20:26	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050001	04/28/2016 08:00	James L Mertz	1

Sample Description: BDC-05-DUP1-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347381
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:16	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-DUP1-160420 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347382
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/20/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0029	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050002A	05/01/2016 19:17	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050002	04/28/2016 08:06	James L Mertz	1

Sample Description: BDC-05-23-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347383
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:00 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

10523

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	4.0	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.4	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	6.3	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 13:06	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 13:06	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 10:18	James S Mathiot	1

Sample Description: BDC-05-23-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347384
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:00 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

20523

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 3.0	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16114667132A	04/24/2016 05:04	Drew M Gerhart	1

Sample Description: BDC-05-23-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347385
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:27	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-23-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347386
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0243	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:29	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-23-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347387
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:30	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-23-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347388
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0226	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050008A	05/01/2016 00:32	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050008	04/28/2016 08:09	James L Mertz	1

Sample Description: BDC-05-21-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347389
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:35 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

10521

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	1.7	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	2.4	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	12.7	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 13:26	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 13:26	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 10:31	James S Mathiot	1

Sample Description: BDC-05-21-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347390
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:35 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

20521

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.0 U		1.0	1
07105	Ethene	74-85-1	1.6 J		1.0	1
07105	Methane	74-82-8	3,300 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	20 U		20	20
07105	Ethane	74-84-0	20 U		20	20
07105	Ethene	74-85-1	20 U		20	20
07105	Methane	74-82-8	4,600		60	20
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	1.1		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 01:39	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 19:22	Johanna C Kennedy	20
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 14:39	Drew M Gerhart	1

Sample Description: BDC-05-21-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347391
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:35 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 02:43	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-21-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347392
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:35 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0156	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 02:51	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-21-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347393
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:35 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 03:50	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-21-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347394
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 05:35 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0164	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 03:59	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-22-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347395
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

10522

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	7.3	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.9	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	6.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 13:46	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 13:46	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 10:45	James S Mathiot	1

Sample Description: BDC-05-22-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347396
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:25 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

20522

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 22.4	mg/l 0.60	2

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16114667132A	04/27/2016 02:35	Drew M Gerhart	2

Sample Description: BDC-05-22-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347397
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 02:53	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-22-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347398
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0345	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 02:55	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-22-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347399
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 03:00	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-22-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347400
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:25 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0340	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 03:02	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-20-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347401
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

10520

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	0.3	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	6.8	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	16.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 14:07	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 14:07	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049501B	04/28/2016 10:58	James S Mathiot	1

Sample Description: BDC-05-20-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347402
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

20520

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	2.5 J		1.0	1
07105	Ethene	74-85-1	6.1		1.0	1
07105	Methane	74-82-8	6,400 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	8,800		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 01:57	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 19:41	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 14:52	Drew M Gerhart	1

Sample Description: BDC-05-20-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347403
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 03:03	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-20-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347404
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals					
06025	Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0338	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 03:05	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-20-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347405
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:55 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 03:07	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-20-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347406
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 06:55 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0296	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050006A	05/03/2016 03:08	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050006	05/02/2016 06:50	James L Mertz	1

Sample Description: BDC-05-08-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347407
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 07:30 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05081

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C		ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.2	0.2	1
Wet Chemistry		SM 5310 C-2000		mg/l	
00273	Total Organic Carbon	n.a.	3.8	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 14:27	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 14:27	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049502A	04/28/2016 11:54	James S Mathiot	1

Sample Description: BDC-05-08-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347408
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 07:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

05082

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 15:06	Drew M Gerhart	1

Sample Description: BDC-05-08-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347409
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 07:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0070	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:00	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-08-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347410
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 07:30 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0135	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:02	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-08-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347411
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 07:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:07	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-08-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347412
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 07:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0120	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:09	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-04-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347413
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:00 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

05041

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C			ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.4	0.2	1
11996	Tetrachloroethene	127-18-4	1.0	0.2	1
11996	Trichloroethene	79-01-6	0.3	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry SM 5310 C-2000			mg/l	mg/l	
00273	Total Organic Carbon	n.a.	2.4	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 14:47	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 14:47	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049502A	04/28/2016 12:34	James S Mathiot	1

Sample Description: BDC-05-04-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347414
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

05042

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 12.2	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16114667132A	04/24/2016 04:24	Drew M Gerhart	1

Sample Description: BDC-05-04-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347415
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0042	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:11	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-04-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347416
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0020	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:12	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-04-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347417
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
06033	Metals Dissolved Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0029	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:14	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-04-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347418
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:00 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0013 J	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050007A	05/03/2016 04:16	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050007	05/02/2016 07:41	James L Mertz	1

Sample Description: BDC-05-05-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347419
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:30 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05051

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.3	0.2	1
11996	Trichloroethene	79-01-6	0.6	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	1.0 U	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 15:08	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 15:08	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049502A	04/28/2016 12:48	James S Mathiot	1

Sample Description: BDC-05-05-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347420
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:30 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

05052

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 13.4	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16114667132A	04/24/2016 04:38	Drew M Gerhart	1

Sample Description: BDC-05-05-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347421
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050008A	05/03/2016 01:45	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050008	05/02/2016 07:38	James L Mertz	1

Sample Description: BDC-05-05-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347422
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.00081 J	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050008A	05/03/2016 01:53	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050008	05/02/2016 07:38	James L Mertz	1

Sample Description: BDC-05-05-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347423
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161207050008A	05/03/2016 01:55	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050008	05/02/2016 07:38	James L Mertz	1

Sample Description: BDC-05-05-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347424
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 08:30 by CH The Boeing Company
PO Box 3707
Submitted: 04/22/2016 19:25 MC 1W-12
Reported: 05/05/2016 12:40 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals Dissolved					
06025	Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.00040 U	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161207050008A	05/03/2016 01:57	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161207050008	05/02/2016 07:38	James L Mertz	1

Sample Description: BDC-05-DUP2-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347425
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05D21

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C		ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	1.7	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	2.4	0.2	1
Wet Chemistry		SM 5310 C-2000		mg/l	
00273	Total Organic Carbon	n.a.	13.3	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 15:28	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 15:28	Kerri E Legerlotz	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16119049502A	04/28/2016 13:02	James S Mathiot	1

Sample Description: BDC-05-DUP2-160421 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347426
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25
Reported: 05/05/2016 12:40

05D22

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.0 U		1.0	1
07105	Ethene	74-85-1	1.6 J		1.0	1
07105	Methane	74-82-8	3,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	4,400		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	1.0		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 02:16	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161170006A	04/26/2016 19:59	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16114667902A	04/24/2016 15:20	Drew M Gerhart	1

Sample Description: BDC-05-DUP2-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347427
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 18:07	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-DUP2-160421 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347428
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0173	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050003A	05/01/2016 18:08	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050003	04/28/2016 08:12	James L Mertz	1

Sample Description: BDC-05-DUP2-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347429
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:31	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: BDC-05-DUP2-160421 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347430
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 04/21/2016 by CH

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0175	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	161177050004A	05/01/2016 21:33	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	161177050004	04/27/2016 07:51	James L Mertz	1

Sample Description: Trip Blank Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347431
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 03/22/2016

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

DCTB1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H161251AA	05/04/2016 11:04	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161251AA	05/04/2016 11:04	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8347432
LL Group # 1653597
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 03/22/2016

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 04/22/2016 19:25

Reported: 05/05/2016 12:40

DCTB2

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	6.2	3.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161170006A	04/27/2016 02:35	Johanna C Kennedy	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ
	ug/l	ug/l
Batch number: H161203AA	Sample number(s): 8347287, 8347293, 8347299, 8347305, 8347311, 8347317, 8347323, 8347329, 8347335, 8347341, 8347347	
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Batch number: H161251AA	Sample number(s): 8347353, 8347359, 8347365, 8347371, 8347377, 8347383, 8347389, 8347395, 8347401, 8347407, 8347413, 8347419, 8347425, 8347431	
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 161170006A	Sample number(s): 8347288, 8347294, 8347300, 8347306, 8347312, 8347318, 8347324, 8347330, 8347336, 8347342, 8347348, 8347354, 8347360, 8347366, 8347372, 8347378, 8347390, 8347402, 8347426, 8347432	
Acetylene	1.0 U	1.0
Ethane	1.0 U	1.0
Ethene	1.0 U	1.0
Methane	3.0 U	3.0
	mg/l	mg/l
Batch number: 161177050001A	Sample number(s): 8347289-8347292, 8347295-8347298, 8347379-8347380	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161177050002A	Sample number(s): 8347307-8347310, 8347313-8347316, 8347381-8347382	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161177050003A	Sample number(s): 8347319-8347322, 8347325-8347328, 8347427-8347428	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161177050004A	Sample number(s): 8347337-8347340, 8347343-8347346, 8347429-8347430	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161177050005A	Sample number(s): 8347349-8347352, 8347355-8347358	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

Method Blank (continued)

Analysis Name	Result	MDL
	mg/l	mg/l
Batch number: 161177050006A	Sample number(s): 8347367-8347370,8347373-8347376	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161177050007A	Sample number(s): 8347301-8347304,8347331-8347334	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161177050008A	Sample number(s): 8347361-8347364,8347385-8347388	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161207050006A	Sample number(s): 8347391-8347392,8347397-8347400,8347403-8347406	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161207050007A	Sample number(s): 8347393-8347394,8347409-8347412,8347415-8347418	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Batch number: 161207050008A	Sample number(s): 8347421-8347424	
Arsenic	0.00040 U	0.00040
Copper	0.00040 U	0.00040
Analysis Name	Result	LOQ
	mg/l	mg/l
Batch number: 16119049501A	Sample number(s): 8347287,8347293,8347299,8347305,8347311,8347317,8347323,8347329,8347335,8347341	
Total Organic Carbon	1.0 U	1.0
Batch number: 16119049501B	Sample number(s): 8347347,8347353,8347359,8347365,8347371,8347377,8347383,8347389,8347395,8347401	
Total Organic Carbon	1.0 U	1.0
Batch number: 16119049502A	Sample number(s): 8347407,8347413,8347419,8347425	
Total Organic Carbon	1.0 U	1.0
Analysis Name	Result	MDL
	mg/l	mg/l
Batch number: 16114667132A	Sample number(s): 8347384,8347396,8347414,8347420	
Sulfate	0.30 U	0.30
Batch number: 16114667603A	Sample number(s): 8347288,8347294,8347300,8347306,8347312,8347318,8347324,8347330,8347336,8347342	
Sulfate	0.30 U	0.30
Batch number: 16114667902A	Sample number(s): 8347348,8347354,8347360,8347366,8347372,8347378,8347390,8347402,8347408,8347426	
Sulfate	0.30 U	0.30

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: H161203AA	Sample number(s): 8347287, 8347293, 8347299, 8347305, 8347311, 8347317, 8347323, 8347329, 8347335, 8347341, 8347347								
cis-1,2-Dichloroethene	5.00	4.90	5.00	4.82	98	96	80-120	2	30
Tetrachloroethene	5.00	5.11	5.00	5.08	102	102	80-120	1	30
Trichloroethene	5.00	5.05	5.00	4.98	101	100	80-120	1	30
Vinyl Chloride	5.00	5.36	5.00	5.24	107	105	62-128	2	30
Batch number: H161251AA	Sample number(s): 8347353, 8347359, 8347365, 8347371, 8347377, 8347383, 8347389, 8347395, 8347401, 8347407, 8347413, 8347419, 8347425, 8347431								
cis-1,2-Dichloroethene	5.00	5.32	5.00	5.18	106	104	80-120	3	30
Tetrachloroethene	5.00	5.04	5.00	5.21	101	104	80-120	3	30
Trichloroethene	5.00	5.46	5.00	5.24	109	105	80-120	4	30
Vinyl Chloride	5.00	5.26	5.00	5.14	105	103	62-128	2	30
Batch number: 161170006A	Sample number(s): 8347288, 8347294, 8347300, 8347306, 8347312, 8347318, 8347324, 8347330, 8347336, 8347342, 8347348, 8347354, 8347360, 8347366, 8347372, 8347378, 8347390, 8347402, 8347426, 8347432								
Acetylene	51.1	56.42			110		61-148		
Ethane	58.4	58.05			99		85-115		
Ethene	60.8	60.34			99		83-115		
Methane	59.8	64.29			108		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 161177050001A	Sample number(s): 8347289-8347292, 8347295-8347298, 8347379-8347380								
Arsenic	0.0100	0.0106			106		85-115		
Copper	0.0500	0.0537			107		85-115		
Batch number: 161177050002A	Sample number(s): 8347307-8347310, 8347313-8347316, 8347381-8347382								
Arsenic	0.0100	0.0105			105		85-115		
Copper	0.0500	0.0537			107		85-115		
Batch number: 161177050003A	Sample number(s): 8347319-8347322, 8347325-8347328, 8347427-8347428								
Arsenic	0.0100	0.0102			102		85-115		
Copper	0.0500	0.0516			103		85-115		
Batch number: 161177050004A	Sample number(s): 8347337-8347340, 8347343-8347346, 8347429-8347430								
Arsenic	0.0100	0.0111			111		85-115		
Copper	0.0500	0.0543			109		85-115		
Batch number: 161177050005A	Sample number(s): 8347349-8347352, 8347355-8347358								
Arsenic	0.0100	0.0100			100		85-115		
Copper	0.0500	0.0516			103		85-115		
Batch number: 161177050006A	Sample number(s): 8347367-8347370, 8347373-8347376								
Arsenic	0.0100	0.00997			100		85-115		
Copper	0.0500	0.0509			102		85-115		
Batch number: 161177050007A	Sample number(s): 8347301-8347304, 8347331-8347334								
Arsenic	0.0100	0.0101			101		85-115		

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/l	LCS Conc mg/l	LCSD Spike Added mg/l	LCSD Conc mg/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Copper	0.0500	0.0510			102		85-115		
Batch number: 161177050008A	Sample number(s): 8347361-8347364,8347385-8347388								
Arsenic	0.0100	0.0104			104		85-115		
Copper	0.0500	0.0535			107		85-115		
Batch number: 161207050006A	Sample number(s): 8347391-8347392,8347397-8347400,8347403-8347406								
Arsenic	0.0100	0.0112			112		85-115		
Copper	0.0500	0.0545			109		85-115		
Batch number: 161207050007A	Sample number(s): 8347393-8347394,8347409-8347412,8347415-8347418								
Arsenic	0.0100	0.0103			103		85-115		
Copper	0.0500	0.0516			103		85-115		
Batch number: 161207050008A	Sample number(s): 8347421-8347424								
Arsenic	0.0100	0.0111			111		85-115		
Copper	0.0500	0.0507			101		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16119049501A	Sample number(s): 8347287,8347293,8347299,8347305,8347311,8347317,8347323,8347329,8347335,8347341								
Total Organic Carbon	25	24.16			97		91-113		
Batch number: 16119049501B	Sample number(s): 8347347,8347353,8347359,8347365,8347371,8347377,8347383,8347389,8347395,8347401								
Total Organic Carbon	25	24.16			97		91-113		
Batch number: 16119049502A	Sample number(s): 8347407,8347413,8347419,8347425								
Total Organic Carbon	25	23.73			95		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16114667132A	Sample number(s): 8347384,8347396,8347414,8347420								
Sulfate	7.50	7.49			100		90-110		
Batch number: 16114667603A	Sample number(s): 8347288,8347294,8347300,8347306,8347312,8347318,8347324,8347330,8347336,8347342								
Sulfate	7.50	7.52			100		90-110		
Batch number: 16114667902A	Sample number(s): 8347348,8347354,8347360,8347366,8347372,8347378,8347390,8347402,8347408,8347426								
Sulfate	7.50	7.60			101		90-110		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
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*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 161170006A	Sample number(s): 8347288,8347294,8347300,8347306,8347312,8347318,8347324,8347330,8347336,8347342,8347348,8347354,8347360,8347366,8347372,8347378,8347390,8347402,8347426,8347432 UNSPK: 8347288									
Acetylene	1.0 U	51.1	55.33	51.1	51.2	108	100	61-148	8	20
Ethane	6.62	58.4	68.83	58.4	63.87	107	98	74-131	7	30
Ethene	1.09	60.8	78.37	60.8	72.21	127	117	72-133	8	30
Methane	16655.16	59.8	16119.71	59.8	14317	-894 (2)	-3909 (2)	73-125	12	30
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 161177050001A	Sample number(s): 8347289-8347292,8347295-8347298,8347379-8347380 UNSPK: 8347289, P347289									
Arsenic	0.0415	0.0100	0.0530			115 (2)		70-130		
Copper	0.00287	0.0500	0.0553			105		70-130		
Batch number: 161177050002A	Sample number(s): 8347307-8347310,8347313-8347316,8347381-8347382 UNSPK: 8347307, P347307									
Arsenic	0.0579	0.0100	0.0666			88 (2)		70-130		
Copper	0.000885	0.0500	0.0540			106		70-130		
Batch number: 161177050003A	Sample number(s): 8347319-8347322,8347325-8347328,8347427-8347428 UNSPK: 8347319, P347319									
Arsenic	0.00401	0.0100	0.0144			104		70-130		
Copper	0.000643	0.0500	0.0512			101		70-130		
Batch number: 161177050004A	Sample number(s): 8347337-8347340,8347343-8347346,8347429-8347430 UNSPK: 8347337, P347337									
Arsenic	0.0162	0.0100	0.0266			104		70-130		
Copper	0.00119	0.0500	0.0538			105		70-130		
Batch number: 161177050005A	Sample number(s): 8347349-8347352,8347355-8347358 UNSPK: 8347349, P347349									
Arsenic	0.0198	0.0100	0.0294			97		70-130		
Copper	0.00182	0.0500	0.0541			105		70-130		
Batch number: 161177050006A	Sample number(s): 8347367-8347370,8347373-8347376 UNSPK: 8347367, P347367									
Arsenic	0.00273	0.0100	0.0128			101		70-130		
Copper	0.00136	0.0500	0.0506			99		70-130		
Batch number: 161177050007A	Sample number(s): 8347301-8347304,8347331-8347334 UNSPK: 8347301, P347301									
Arsenic	0.00275	0.0100	0.0129			102		70-130		
Copper	0.000481	0.0500	0.0497			98		70-130		
Batch number: 161177050008A	Sample number(s): 8347361-8347364,8347385-8347388 UNSPK: 8347361, P347361									
Arsenic	0.00793	0.0100	0.0185			106		70-130		
Copper	0.000621	0.0500	0.0529			104		70-130		
Batch number: 161207050006A	Sample number(s): 8347391-8347392,8347397-8347400,8347403-8347406 UNSPK: 8347391, P347391									
Arsenic	0.0177	0.0100	0.0292			115		70-130		

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/l	MS Spike Added mg/l	MS Conc mg/l	MSD Spike Added mg/l	MSD Conc mg/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Copper	0.000510	0.0500	0.0538			107		70-130		
Batch number: 161207050007A	Sample number(s): 8347393-8347394,8347409-8347412,8347415-8347418 UNSPK: 8347393, P347393									
Arsenic	0.0153	0.0100	0.0272			119		70-130		
Copper	0.00040 U	0.0500	0.0538			108		70-130		
Batch number: 161207050008A	Sample number(s): 8347421-8347424 UNSPK: 8347421, P347421									
Arsenic	0.000920	0.0100	0.0121			112		70-130		
Copper	0.00179	0.0500	0.0538			104		70-130		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16119049501A	Sample number(s): 8347287,8347293,8347299,8347305,8347311,8347317,8347323,8347329,8347335,8347341 UNSPK: 8347287									
Total Organic Carbon	29.01	10	38.38			94		91-113		
Batch number: 16119049501B	Sample number(s): 8347347,8347353,8347359,8347365,8347371,8347377,8347383,8347389,8347395,8347401 UNSPK: 8347347									
Total Organic Carbon	6.51	10	16.64			101		91-113		
Batch number: 16119049502A	Sample number(s): 8347407,8347413,8347419,8347425 UNSPK: 8347407									
Total Organic Carbon	3.80	10	13.94			101		91-113		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16114667132A	Sample number(s): 8347384,8347396,8347414,8347420 UNSPK: P345760									
Sulfate	189.17	500	696.83			102		90-110		
Batch number: 16114667603A	Sample number(s): 8347288,8347294,8347300,8347306,8347312,8347318,8347324,8347330,8347336,8347342 UNSPK: 8347300									
Sulfate	8.51	10	19.22			107		90-110		
Batch number: 16114667902A	Sample number(s): 8347348,8347354,8347360,8347366,8347372,8347378,8347390,8347402,8347408,8347426 UNSPK: 8347348									
Sulfate	0.30 U	10	10.03			100		90-110		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 161177050001A	Sample number(s): 8347289-8347292,8347295-8347298,8347379-8347380 BKG: 8347289, P347289			
Arsenic	0.0415	0.0430	4	20
Copper	0.00287	0.00304	6 (1)	20
Batch number: 161177050002A	Sample number(s): 8347307-8347310,8347313-8347316,8347381-8347382 BKG: 8347307, P347307			
Arsenic	0.0579	0.0573	1	20
Copper	0.000885	0.000921	4 (1)	20
Batch number: 161177050003A	Sample number(s): 8347319-8347322,8347325-8347328,8347427-8347428 BKG: 8347319, P347319			
Arsenic	0.00401	0.00399	0 (1)	20
Copper	0.000643	0.00040 U	200* (1)	20
Batch number: 161177050004A	Sample number(s): 8347337-8347340,8347343-8347346,8347429-8347430 BKG: 8347337, P347337			
Arsenic	0.0162	0.0160	1	20
Copper	0.00119	0.000902	27* (1)	20
Batch number: 161177050005A	Sample number(s): 8347349-8347352,8347355-8347358 BKG: 8347349, P347349			
Arsenic	0.0198	0.0205	4	20
Copper	0.00182	0.00156	16 (1)	20
Batch number: 161177050006A	Sample number(s): 8347367-8347370,8347373-8347376 BKG: 8347367, P347367			
Arsenic	0.00273	0.00303	11 (1)	20
Copper	0.00136	0.00122	10 (1)	20
Batch number: 161177050007A	Sample number(s): 8347301-8347304,8347331-8347334 BKG: 8347301, P347301			
Arsenic	0.00275	0.00276	0 (1)	20
Copper	0.000481	0.00040 U	200* (1)	20
Batch number: 161177050008A	Sample number(s): 8347361-8347364,8347385-8347388 BKG: 8347361, P347361			
Arsenic	0.00793	0.00747	6 (1)	20
Copper	0.000621	0.000561	10 (1)	20
Batch number: 161207050006A	Sample number(s): 8347391-8347392,8347397-8347400,8347403-8347406 BKG: 8347391, P347391			
Arsenic	0.0177	0.0184	4	20
Copper	0.000510	0.00040 U	200* (1)	20
Batch number: 161207050007A	Sample number(s): 8347393-8347394,8347409-8347412,8347415-8347418 BKG: 8347393, P347393			
Arsenic	0.0153	0.0166	8	20
Copper	0.00040 U	0.000504	200* (1)	20
Batch number: 161207050008A	Sample number(s): 8347421-8347424 BKG: 8347421, P347421			
Arsenic	0.000920	0.000904	2 (1)	20
Copper	0.00179	0.00256	35* (1)	20
	mg/l	mg/l		

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

Laboratory Duplicate (continued)

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 16119049501A	Sample number(s): 8347287, 8347293, 8347299, 8347305, 8347311, 8347317, 8347323, 8347329, 8347335, 8347341 BKG: 8347287			
Total Organic Carbon	29.01	29.01	0	3
Batch number: 16119049501B	Sample number(s): 8347347, 8347353, 8347359, 8347365, 8347371, 8347377, 8347383, 8347389, 8347395, 8347401 BKG: 8347347			
Total Organic Carbon	6.51	6.49	0	3
Batch number: 16119049502A	Sample number(s): 8347407, 8347413, 8347419, 8347425 BKG: 8347407			
Total Organic Carbon	3.80	3.75	1 (1)	3
Batch number: 16114667132A	Sample number(s): 8347384, 8347396, 8347414, 8347420 BKG: P345760			
Sulfate	189.17	197.73	4 (1)	15
Batch number: 16114667603A	Sample number(s): 8347288, 8347294, 8347300, 8347306, 8347312, 8347318, 8347324, 8347330, 8347336, 8347342 BKG: 8347300			
Sulfate	8.51	8.43	1	15
Batch number: 16114667902A	Sample number(s): 8347348, 8347354, 8347360, 8347366, 8347372, 8347378, 8347390, 8347402, 8347408, 8347426 BKG: 8347348			
Sulfate	0.30 U	0.30 U	0 (1)	15

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H161203AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8347287	98	102	99	94
8347293	101	102	101	95
8347299	98	99	101	93
8347305	98	101	100	92
8347311	104	105	97	93
8347317	103	103	98	93
8347323	101	102	97	95
8347329	103	100	97	92
8347335	101	103	98	93
8347341	99	98	99	92
8347347	99	100	100	90
Blank	106	103	97	93
LCS	109	103	95	95

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
LCSD	107	101	96	96
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H161251AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8347353	102	96	102	93
8347359	101	98	101	91
8347365	101	97	103	92
8347371	102	100	103	95
8347377	110	104	96	94
8347383	110	108	95	95
8347389	105	97	100	93
8347395	105	101	99	93
8347401	105	100	99	92
8347407	104	98	101	93
8347413	102	99	102	92
8347419	101	97	101	91
8347425	101	95	104	92
8347431	101	103	104	94
Blank	104	99	99	93
LCS	110	103	94	95
LCSD	104	97	99	97
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 161170006A

	Propene
8347288	80
8347288DL	94
8347294	90
8347294DL	96
8347300	96
8347306	89
8347306DL	96
8347312	87
8347312DL	108
8347318	89
8347318DL	111
8347324	99
8347324DL	108
8347330	81
8347330DL	99
8347336	86
8347336DL	93
8347342	85
8347342DL	101

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/05/2016 12:40

Group Number: 1653597

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

	Propene
8347348	92
8347348DL	98
8347354	90
8347354DL	99
8347360	89
8347360DL	97
8347366	89
8347366DL	103
8347372	85
8347372DL	96
8347378	88
8347378DL	99
8347390	91
8347390DL	101
8347402	87
8347402DL	94
8347426	86
8347426DL	97
8347432	93
Blank	99
LCS	101
MS	84
MSD	76
Limits:	44-123

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Boeing Chain of Custody

Act. # 13419 Group # 1655591 Sample # 854757-32 PAGE 1 of 2

Lancaster Laboratories
 For Eurofins Lancaster Laboratories use only
 Please print. Instructions on reverse side correspond.

Lancaster Laboratories

1 **#13419** Client Information **TUKWILA, WA**

Site Location: **BOEING**

Site Project: **DEV. CTR.**

Site Program/ #: **SWMU-17** 53rd EVENT

Boeing PM: **JAMES BET**

Consultant Contact: **LANDAD**

Report To: **LANDAD**

Invoice To: Boeing EHS Other (specify):

Sampler: **CHARLES HARDY** # of Coolers: **5**

2 Sample Identification	3 Collected		Matrix	No. of Containers	4 Analyses Requested								5 Remarks/Comments	
	Date	Time			38	57	91	08	08	08	08			
BDC-05-17-160420	4-20-16	500	A9	11	X	X	X	X	X	X	X	X	X	Ferz
BDC-05-16-160420	4-20-16	535	A9	11	X	X	X	X	X	X	X	X	X	0.8 mg/L
BDC-05-18-160420	4-20-16	620	A9	11	X	X	X	X	X	X	X	X	X	1.0 mg/L
BDC-05-15-160420	4-20-16	705	A9	11	X	X	X	X	X	X	X	X	X	0.8
BDC-05-14-160420	4-20-16	745	A9	11	X	X	X	X	X	X	X	X	X	0.6
BDC-05-24-160420	4-20-16	840	A9	11	X	X	X	X	X	X	X	X	X	2.0
BDC-05-13-160420	4-20-16	920	A9	11	X	X	X	X	X	X	X	X	X	1.0
BDC-05-19-160420	4-20-16	950	A9	11	X	X	X	X	X	X	X	X	X	1.2
BDC-05-12-160420	4-20-16	1020	A9	11	X	X	X	X	X	X	X	X	X	1.1
BDC-05-03-160420	4-20-16	1055	A9	11	X	X	X	X	X	X	X	X	X	0.6
BDC-05-11-160420	4-20-16	1125	A9	11	X	X	X	X	X	X	X	X	X	0.8
BDC-05-10-160420	4-20-16	1155	A9	11	X	X	X	X	X	X	X	X	X	1.1 mg/L
BDC-05-09-160420	4-20-16	1225	A9	11	X	X	X	X	X	X	X	X	X	3.0
BDC-05-07-160420	4-20-16	1250	A9	11	X	X	X	X	X	X	X	X	X	2.0
BDC-05-02-160420	4-20-16	1315	A9	11	X	X	X	X	X	X	X	X	X	1.8

6 Turnaround Time Requested (please circle): **Standard**

Relinquished by: **Charles Hardy** Date/Time: **ARR 2/20/16 1000**

Relinquished by: **[Signature]** Date/Time: **2/20/16**

Relinquished by: **[Signature]** Date/Time: **2/20/16**

Relinquished by commercial carrier (circle): **L.I. BARTI QC** Other: **COURIER**

UPS FedEx Yes No

Temperature upon Receipt: **17.7 °C**

Custody Seals Intact?: **Yes**

7 Date/Time: **4/20/16 1925**

Boeing Chain of Custody



Lancaster Laboratories

Acct. # 13419

Group # 13419

For Eurofins Lancaster Laboratories, use only. Sample # 8317267-32
Please print. Instructions on reverse side correspond.

PAGE 2 of 2

1 #13419 Client Information TUKWILA, WA.
 Site Location: BOEING
 Site Project: DEV. CTR.
 Site Program#: SWMU-17
 Boeing PM: JAMES BET
 Consultant Contact: LANDAD
 Report To: LANDAD
 Invoice To: Boeing EHS Other (specify):
 Sampler: CHARLES HARDY # of Coolers: 5

2 Sample Identification	3 Collected		Matrix	No. of Containers
	Date	Time		
BDC-05-DUPI-160420	4-20-16	5:00	Aq	11
BDC-05-23-160421	4-21-16	5:35	Aq	9
BDC-05-21-160421	4-21-16	5:35	Aq	11
BDC-05-22-160421	4-21-16	6:25	Aq	9
BDC-05-20-160421	4-21-16	6:55	Aq	11
BDC-05-08-160421	4-21-16	7:30	Aq	9
BDC-05-07-160421	4-21-16	8:00	Aq	9
BDC-05-05-160421	4-21-16	8:30	Aq	9
BDC-05-DUP2-160421	4-21-16	-	Aq	11
TRIP BLANK	3-22-16	-	Aq	6

6 Turnaround Time Requested (please circle)
 Standard 72 hour 5 day 4 day 24 hour
 Date needed: _____

4 Analyses Requested	5 Remarks/Comments	
	Date/Time	Date/Time
38 V.I. PCE, TCE, DCE		
57 METHANE, ETHANE, ETHENE, ACETYLENE		
91 TOC		
55 SULFATE		
08 TOTAL METALS AS		
08 DISSOLVED METALS AS		
08 LLI BATCH OR DISTRI		

7 Received by: _____ Date/Time: _____
 Received by: _____ Date/Time: _____
 Received by: _____ Date/Time: 4/22/16 19:25
 Temperature upon Receipt: 0.7 - 4.7 °C
 Custody Seals Intact?: Yes (circled) No

Client: Boeing

Delivery and Receipt Information

Delivery Method: SeaTac Arrival Timestamp: 04/22/2016 19:25
 Number of Packages: 5 Number of Projects: 1
 State/Province of Origin: WA

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	6
Paperwork Enclosed:	Yes	Trip Blank Type:	HCI
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Patrick Engle (3472) at 21:54 on 04/22/2016

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

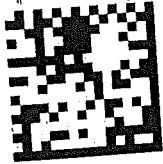
Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT121	4.7	DT	Wet	Y	Bagged	N
2	DT121	0.7	DT	Wet	Y	Bagged	N
3	DT121	0.7	DT	Wet	Y	Bagged	N
4	DT121	0.7	DT	Wet	Y	Bagged	N
5	DT121	3.7	DT	Wet	Y	Bagged	N

G# 1653597

SOUTHWEST AIRLINES

AIRBILL NUMBER

52660570823



PRINTED: 4/21/2016 12:34

LOT PIECE #	LOT TTL PIECES	LOT 01 WEIGHT
2	OF 10	460

FLIGHT DATE 04/21/16

BWI

DEN	1977	19:00
SEA	2694	14:05
STN	FLT	ETD

CRUSH

LOT AIRBILL ID: 0002-G
 AIRBILL NUMBER ID: 526-60570823-01
 ID: 526-60570823-01

SOUTHWEST AIRLINES

AIRBILL NUMBER

52660570823



PRINTED: 4/21/2016 12:34

LOT PIECE #	LOT TTL PIECES	LOT 01 WEIGHT
1	OF 10	460

FLIGHT DATE 04/21/16

BWI

DEN	1977	19:00
SEA	2694	14:05
STN	FLT	ETD

CRUSH

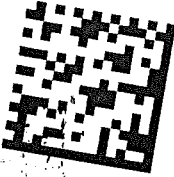
LOT AIRBILL ID: 0001-G
 AIRBILL NUMBER ID: 526-60570823-01
 ID: 526-60570823-01

G # 1653597

SOUTHWEST AIRLINES

AIRBILL NUMBER

52660570823



PRINTED: 4/21/2016

12:34

LOT
PIECE #
7

LOT TTL
PIECES
OF 10

LOT 01
WEIGHT
460

FLIGHT DATE 04/21/16

BMI

1977 19:00

2694 14:05

FLY EID

RUSH

AIRBILL NUMBER ID: 526-60570823-01-0007-G
LOT AIRBILL ID
PIECE ID
DEN SEA STN
1 1 1

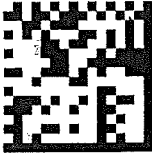


G# 1653597

SOUTHWEST AIRLINES

AIRBILL NUMBER

52660570823



PRINTED: 4/21/2016 12:34

LOT PIECE #	LOT TTL PIECES	LOT 01 WEIGHT	STN	FLY	ETD
9	OF 10	460	DEN	1977	19:00
BWI			SEA	2694	14:05
			FLY		

RUSH

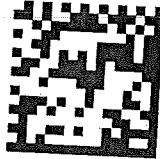
LOT AIRBILL ID: 526-60570823-01-0009-G
 AIRBILL NUMBER ID: 526-60570823-01-0009-G



SOUTHWEST AIRLINES

AIRBILL NUMBER

52660570823



PRINTED: 4/21/2016 12:34

LOT PIECE #	LOT TTL PIECES	LOT 01 WEIGHT	STN	FLY	ETD
4	OF 10	460	DEN	1977	19:00
BWI			SEA	2694	14:05
			FLY		

RUSH

LOT AIRBILL ID: 526-60570823-01-0004-G
 AIRBILL NUMBER ID: 526-60570823-01-0004-G



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m³	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Report Date: August 26, 2016

Project: Boeing_DC:SWMU-17 s-ann

Submission Date: 08/11/2016

Group Number: 1694013

State of Sample Origin: WA

<u>Client Sample Description</u>	Lancaster Labs <u>(LL) #</u>
BDC-05-18-160809 Water	8522376
BDC-05-18-160809 Water	8522377
BDC-05-18-160809 Total Metals Water	8522378
BDC-05-18-160809 Total Metals Water	8522379
BDC-05-18-160809 Dissolved Metals Water	8522380
BDC-05-18-160809 Dissolved Metals Water	8522381
BDC-05-21-160809 Water	8522382
BDC-05-21-160809 Water	8522383
BDC-05-21-160809 Total Metals Water	8522384
BDC-05-21-160809 Total Metals Water	8522385
BDC-05-21-160809 Dissolved Metals Water	8522386
BDC-05-21-160809 Dissolved Metals Water	8522387
BDC-05-02-160809 Water	8522388
BDC-05-02-160809 Water	8522389
BDC-05-02-160809 Total Metals Water	8522390
BDC-05-02-160809 Total Metals Water	8522391
BDC-05-02-160809 Dissolved Metals Water	8522392
BDC-05-02-160809 Dissolved Metals Water	8522393
BDC-05-12-160809 Water	8522394
BDC-05-12-160809 Water	8522395
BDC-05-12-160809 Total Metals Water	8522396
BDC-05-12-160809 Total Metals Water	8522397
BDC-05-12-160809 Dissolved Metals Water	8522398
BDC-05-12-160809 Dissolved Metals Water	8522399
BDC-05-23-160809 Water	8522400
BDC-05-23-160809 Water	8522401
BDC-05-23-160809 Total Metals Water	8522402
BDC-05-23-160809 Total Metals Water	8522403
BDC-05-23-160809 Dissolved Metals Water	8522404
BDC-05-23-160809 Dissolved Metals Water	8522405
BDC-05-22-160809 Water	8522406
BDC-05-22-160809 Water	8522407

BDC-05-22-160809 Total Metals Water	8522408
BDC-05-22-160809 Total Metals Water	8522409
BDC-05-22-160809 Dissolved Metals Water	8522410
BDC-05-22-160809 Dissolved Metals Water	8522411
BDC-05-19-160809 Water	8522412
BDC-05-19-160809 Water	8522413
BDC-05-19-160809 Total Metals Water	8522414
BDC-05-19-160809 Total Metals Water	8522415
BDC-05-19-160809 Dissolved Metals Water	8522416
BDC-05-19-160809 Dissolved Metals Water	8522417
BDC-05-20-160809 Water	8522418
BDC-05-20-160809 Water	8522419
BDC-05-20-160809 Total Metals Water	8522420
BDC-05-20-160809 Total Metals Water	8522421
BDC-05-20-160809 Dissolved Metals Water	8522422
BDC-05-20-160809 Dissolved Metals Water	8522423
BDC-05-24-160809 Water	8522424
BDC-05-24-160809 Water	8522425
BDC-05-24-160809 Total Metals Water	8522426
BDC-05-24-160809 Total Metals Water	8522427
BDC-05-24-160809 Dissolved Metals Water	8522428
BDC-05-24-160809 Dissolved Metals Water	8522429
BDC-05-16-160809 Water	8522430
BDC-05-16-160809 Water	8522431
BDC-05-16-160809 Total Metals Water	8522432
BDC-05-16-160809 Total Metals Water	8522433
BDC-05-16-160809 Dissolved Metals Water	8522434
BDC-05-16-160809 Dissolved Metals Water	8522435
BDC-05-DUP2-160809 Water	8522436
BDC-05-DUP2-160809 Water	8522437
BDC-05-DUP2-160809 Total Metals Water	8522438
BDC-05-DUP2-160809 Total Metals Water	8522439
BDC-05-DUP2-160809 Dissolved Metals Water	8522440
BDC-05-DUP2-160809 Dissolved Metals Water	8522441
Trip Blank Water	8522442

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

Electronic Copy To The Boeing Company
Electronic Copy To Landau

Attn: Lindsey E. Mahrt
Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower

(510) 672-3979

Project Name: Boeing_DC:SWMU-17 s-ann
LL Group #: 1694013

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:**RSKSOP-175 modified, GC Miscellaneous**

Batch #: 162250009A (Sample number(s): 8522377, 8522383, 8522389, 8522395, 8522413, 8522419, 8522425, 8522431, 8522437 UNSPK: 8522377)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Methane

EPA 200.8 rev 5.4, Metals

Batch #: 162287050007A (Sample number(s): 8522378 UNSPK: 8522378 BKG: 8522378)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 162307050001A (Sample number(s): 8522410-8522411, 8522414-8522417, 8522420-8522421 UNSPK: P529674 BKG: P529674)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 162327050003A (Sample number(s): 8522408-8522409, 8522422-8522423, 8522426-8522429, 8522432, 8522434 UNSPK: 8522408 BKG: 8522408)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

EPA 200.8 rev 5.4, Metals Dissolved

Batch #: 162307050001A (Sample number(s): 8522410-8522411, 8522414-8522417, 8522420-8522421 UNSPK: P529674 BKG: P529674)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Batch #: 162327050003A (Sample number(s): 8522408-8522409, 8522422-8522423, 8522426-8522429, 8522432, 8522434 UNSPK: 8522408 BKG: 8522408)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

Sample Description: BDC-05-18-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522376
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 10:00 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

1-518

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	2.6	0.2	1
11996	Tetrachloroethene	127-18-4	1.8	0.2	1
11996	Trichloroethene	79-01-6	2.9	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	1.0 U	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 01:49	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 01:49	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 06:48	Clinton M Wilson	1

Sample Description: BDC-05-18-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522377
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 10:00 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

2-518

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	650 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	5.0 U	5.0	5
07105	Ethane	74-84-0	5.0 U	5.0	5
07105	Ethene	74-85-1	5.0 U	5.0	5
07105	Methane	74-82-8	740	15	5
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	2.5	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 11:11	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 15:50	Johanna C Kennedy	5
00228	Sulfate	EPA 300.0	1	16228972901A	08/16/2016 00:25	Alexandria M Lanager	1

Sample Description: BDC-05-18-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522378
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 10:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162287050007A	08/22/2016 17:59	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162287050007	08/21/2016 21:00	Annamaria Kuhns	1

Sample Description: BDC-05-18-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522379
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 10:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0028	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162287050008A	08/19/2016 03:31	Tara L Snyder	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162287050008	08/18/2016 08:37	Katlin N Cataldi	1

Sample Description: BDC-05-18-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522380
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 10:00 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:15	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-18-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522381
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 10:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0019 J	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:28	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-21-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522382
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:15 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

521-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.6	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.6	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	6.7	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 02:50	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 02:50	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 07:27	Clinton M Wilson	1

Sample Description: BDC-05-21-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522383
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:15 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

521-2

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	2.3 J	1.0	1
07105	Ethene	74-85-1	3.0 J	1.0	1
07105	Methane	74-82-8	8,000 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	11,000	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 16:03	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 16:09	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16228972901B	08/16/2016 06:33	Alexandria M Lanager	1

Sample Description: BDC-05-21-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522384
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:15 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:24	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-21-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522385
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:15 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0081	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:26	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-21-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522386
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:15 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:28	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-21-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522387
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:15 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0084	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:33	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-02-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522388
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:20 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

502-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	0.3	0.2	1
11996	Tetrachloroethene	127-18-4	1.6	0.2	1
11996	Trichloroethene	79-01-6	1.6	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	14.4	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 03:10	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 03:10	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 07:40	Clinton M Wilson	1

Sample Description: BDC-05-02-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522389
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:20 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

502-2

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	4.9 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	8,800 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	12,000		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	3.8		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 16:23	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 16:28	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16228972901B	08/16/2016 06:48	Alexandria M Lanager	1

Sample Description: BDC-05-02-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522390
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:20 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:35	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-02-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522391
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:20 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0209	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:37	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-02-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522392
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:20 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:39	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-02-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522393
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 11:20 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0111	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050001A	08/22/2016 20:40	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050001	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-12-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522394
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:10 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

512-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.4	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	9.4	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 03:31	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 03:31	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 08:08	Clinton M Wilson	1

Sample Description: BDC-05-12-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522395
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:10 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

512-2

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	2.7 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	11,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	13,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 16:42	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 16:48	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16228972901B	08/16/2016 07:03	Alexandria M Lanager	1

Sample Description: BDC-05-12-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522396
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:10 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:37	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-12-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522397
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:10 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0043	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:39	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-12-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522398
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:10 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:41	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-12-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522399
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:10 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0081	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:46	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-23-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522400
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:21 by DB

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

523-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	3.2	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.1	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	7.3	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 03:51	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 03:51	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 08:21	Clinton M Wilson	1

Sample Description: BDC-05-23-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522401
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:21 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 2.8	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16228972901B	08/16/2016 07:18	Alexandria M Lanager	1

Sample Description: BDC-05-23-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522402
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:21 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:48	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-23-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522403
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:21 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0257	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:50	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-23-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522404
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:21 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:52	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-23-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522405
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 12:21 by DB

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PO Box 3707
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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0246	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050002A	08/22/2016 21:53	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050002	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-22-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522406
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:12 by DB

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

522-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	6.2	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	1.1	0.2	1
11996	Vinyl Chloride	75-01-4	1.5	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	6.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 04:11	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 04:11	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 08:34	Clinton M Wilson	1

Sample Description: BDC-05-22-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522407
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:12 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 6.6	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16228972901B	08/16/2016 07:32	Alexandria M Lanager	1

Sample Description: BDC-05-22-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522408
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:12 by DB The Boeing Company
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Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:00	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-22-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522409
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:12 by DB

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Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0289	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:09	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-22-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522410
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:12 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:29	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-22-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522411
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:12 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0297	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:31	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-19-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522412
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:20 by DB

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

519-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.4	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	12.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 04:32	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 04:32	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 08:47	Clinton M Wilson	1

Sample Description: BDC-05-19-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522413
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:20 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

519-2

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0	U	1.0	1
07105	Ethane	74-84-0	3.9	J	1.0	1
07105	Ethene	74-85-1	1.0	U	1.0	1
07105	Methane	74-82-8	16,000	E	3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	200	U	200	200
07105	Ethane	74-84-0	200	U	200	200
07105	Ethene	74-85-1	200	U	200	200
07105	Methane	74-82-8	17,000		600	200
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.60	J	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 17:02	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 17:07	Johanna C Kennedy	200
00228	Sulfate	EPA 300.0	1	16228972901A	08/16/2016 01:09	Alexandria M Lanager	1

Sample Description: BDC-05-19-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522414
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:20 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:33	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-19-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522415
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:20 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0146	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:40	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-19-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522416
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:20 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:42	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-19-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522417
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 13:20 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0136	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:44	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-20-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522418
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:00 by DB

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Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

1-520

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	2.2	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	12.9	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 04:52	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 04:52	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 09:00	Clinton M Wilson	1

Sample Description: BDC-05-20-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522419
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:00 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

2-520

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	2.9 J		1.0	1
07105	Ethene	74-85-1	7.0		1.0	1
07105	Methane	74-82-8	7,100 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	8,400		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.37 J		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 17:42	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 17:26	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16228972901A	08/16/2016 01:24	Alexandria M Lanager	1

Sample Description: BDC-05-20-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522420
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:00 by DB

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PO Box 3707
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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:46	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-20-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522421
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:00 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0300	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162307050001A	08/18/2016 07:47	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162307050001	08/17/2016 20:30	Annamaria Kuhns	1

Sample Description: BDC-05-20-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522422
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:00 by DB

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Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:11	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-20-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522423
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0282	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:13	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-24-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522424
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:35 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

524-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	1.9	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.7	0.2	1
11996	Vinyl Chloride	75-01-4	2.2	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	2.6	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 05:12	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 05:12	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 09:13	Clinton M Wilson	1

Sample Description: BDC-05-24-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522425
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:35 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

524-2

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	3.6 J		1.0	1
07105	Ethene	74-85-1	3.6 J		1.0	1
07105	Methane	74-82-8	6,700 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	6,000		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	2.2		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 18:02	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/16/2016 11:10	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16228972901A	08/16/2016 01:39	Alexandria M Lanager	1

Sample Description: BDC-05-24-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522426
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:35 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:18	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-24-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522427
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:35 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0045	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:20	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-24-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522428
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:35 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:22	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-24-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522429
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:35 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0033	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:24	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-16-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522430
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:40 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

516-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.9	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	16.9	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 05:32	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 05:32	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298706A	08/24/2016 09:26	Clinton M Wilson	1

Sample Description: BDC-05-16-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522431
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:40 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

516-2

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	12	1.0	1
07105	Ethene	74-85-1	1.0 J	1.0	1
07105	Methane	74-82-8	12,000 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	100 U	100	100
07105	Ethane	74-84-0	100 U	100	100
07105	Ethene	74-85-1	100 U	100	100
07105	Methane	74-82-8	15,000	300	100
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 18:21	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 18:05	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16228972901A	08/16/2016 01:54	Alexandria M Lanager	1

Sample Description: BDC-05-16-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522432
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:40 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:26	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-16-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522433
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:40 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0325	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162367050005A	08/24/2016 12:12	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162367050005	08/23/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-16-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522434
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:40 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162327050003A	08/22/2016 19:27	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162327050003	08/22/2016 07:05	Ann Borg	1

Sample Description: BDC-05-16-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522435
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 14:40 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0326	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162367050005A	08/24/2016 12:13	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162367050005	08/23/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-DUP2-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522436
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 07:00 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

FD2-1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.3	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	13.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 05:53	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 05:53	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16238298704B	08/26/2016 03:49	Clinton M Wilson	1

Sample Description: BDC-05-DUP2-160809 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522437
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 07:00 by DB

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30
Reported: 08/26/2016 12:45

FD2-2

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0	U	1.0	1
07105	Ethane	74-84-0	3.8	J	1.0	1
07105	Ethene	74-85-1	1.0	U	1.0	1
07105	Methane	74-82-8	15,000	E	3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	100
07105	Ethane	74-84-0	100	U	100	100
07105	Ethene	74-85-1	100	U	100	100
07105	Methane	74-82-8	19,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.66	J	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 18:41	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 18:25	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16228972901A	08/16/2016 02:08	Alexandria M Lanager	1

Sample Description: BDC-05-DUP2-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522438
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 07:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162367050005A	08/24/2016 12:15	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162367050005	08/23/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-DUP2-160809 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522439
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 07:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0154	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162367050005A	08/24/2016 12:17	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162367050005	08/23/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-DUP2-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522440
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 07:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	162367050005A	08/24/2016 12:19	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162367050005	08/23/2016 23:00	Annamaria Kuhns	1

Sample Description: BDC-05-DUP2-160809 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522441
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016 07:00 by DB The Boeing Company
PO Box 3707
Submitted: 08/11/2016 09:30 MC 1W-12
Reported: 08/26/2016 12:45 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0138	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	162367050005A	08/24/2016 12:20	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	162367050005	08/23/2016 23:00	Annamaria Kuhns	1

Sample Description: Trip Blank Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8522442
LL Group # 1694013
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 08/09/2016

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 08/11/2016 09:30

Reported: 08/26/2016 12:45

TBS17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H162292AA	08/17/2016 06:13	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162292AA	08/17/2016 06:13	Matthew S Krause	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:45

Group Number: 1694013

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ
	ug/l	ug/l
Batch number: H162292AA	Sample number(s): 8522376, 8522382, 8522388, 8522394, 8522400, 8522406, 8522412, 8522418, 8522424, 8522430, 8522436, 8522442	
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 162250009A	Sample number(s): 8522377, 8522383, 8522389, 8522395, 8522413, 8522419, 8522425, 8522431, 8522437	
Acetylene	1.0 U	1.0
Ethane	1.0 U	1.0
Ethene	1.0 U	1.0
Methane	3.0 U	3.0
Analysis Name	Result	LOQ
	mg/l	mg/l
Batch number: 162287050007A	Sample number(s): 8522378	
Copper	0.0020 U	0.0020
Analysis Name	Result	MDL
	mg/l	mg/l
Batch number: 162287050008A	Sample number(s): 8522379	
Arsenic	0.00040 U	0.00040
Batch number: 162307050001A	Sample number(s): 8522410-8522411, 8522414-8522417, 8522420-8522421	
Arsenic	0.00068 U	0.00068
Copper	0.00052 U	0.00052
Batch number: 162327050001A	Sample number(s): 8522380, 8522384-8522387, 8522390-8522393	
Arsenic	0.00040 U	0.00040
Copper	0.00021 U	0.00021
Batch number: 162327050002A	Sample number(s): 8522381, 8522396-8522399, 8522402-8522405	
Arsenic	0.00040 U	0.00040
Copper	0.00021 U	0.00021
Batch number: 162327050003A	Sample number(s): 8522408-8522409, 8522422-8522423, 8522426-8522429, 8522432, 8522434	
Arsenic	0.00040 U	0.00040
Copper	0.00021 U	0.00021
Batch number: 162367050005A	Sample number(s): 8522433, 8522435, 8522438-8522441	
Arsenic	0.00040 U	0.00040

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:45

Group Number: 1694013

Method Blank (continued)

Analysis Name	Result	MDL
	mg/l	mg/l
Copper	0.00034 U	0.00034
Analysis Name	Result	LOQ
	mg/l	mg/l
Batch number: 16236298706A	Sample number(s): 8522376, 8522382, 8522388, 8522394, 8522400, 8522406, 8522412, 8522418, 8522424, 8522430	
Total Organic Carbon	1.0 U	1.0
Batch number: 16238298704B	Sample number(s): 8522436	
Total Organic Carbon	1.0 U	1.0
Analysis Name	Result	MDL
	mg/l	mg/l
Batch number: 16228972901A	Sample number(s): 8522377, 8522413, 8522419, 8522425, 8522431, 8522437	
Sulfate	0.30 U	0.30
Batch number: 16228972901B	Sample number(s): 8522383, 8522389, 8522395, 8522401, 8522407	
Sulfate	0.30 U	0.30

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: H162292AA	Sample number(s): 8522376, 8522382, 8522388, 8522394, 8522400, 8522406, 8522412, 8522418, 8522424, 8522430, 8522436, 8522442								
cis-1,2-Dichloroethene	5.00	5.10			102		80-120		
Tetrachloroethene	5.00	5.02			100		80-120		
Trichloroethene	5.00	5.16			103		80-120		
Vinyl Chloride	5.00	4.51			90		62-128		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162250009A	Sample number(s): 8522377, 8522383, 8522389, 8522395, 8522413, 8522419, 8522425, 8522431, 8522437								
Acetylene	51.2	49.75			97		61-148		
Ethane	59.2	60.21			102		85-115		
Ethene	60.8	61.35			101		83-115		
Methane	59.8	64.08			107		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 162287050007A	Sample number(s): 8522378								
Copper	0.0500	0.0469			94		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 162287050008A	Sample number(s): 8522379								
Arsenic	0.0100	0.0113			113		85-115		

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:45

Group Number: 1694013

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/l	LCS Conc mg/l	LCSD Spike Added mg/l	LCSD Conc mg/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 162307050001A	Sample number(s): 8522410-8522411,8522414-8522417,8522420-8522421								
Arsenic	0.0100	0.0105			105		85-115		
Copper	0.0500	0.0520			104		85-115		
Batch number: 162327050001A	Sample number(s): 8522380,8522384-8522387,8522390-8522393								
Arsenic	0.0100	0.00953			95		85-115		
Copper	0.0500	0.0491			98		85-115		
Batch number: 162327050002A	Sample number(s): 8522381,8522396-8522399,8522402-8522405								
Arsenic	0.0100	0.0102			102		85-115		
Copper	0.0500	0.0506			101		85-115		
Batch number: 162327050003A	Sample number(s): 8522408-8522409,8522422-8522423,8522426-8522429,8522432,8522434								
Arsenic	0.0100	0.0107			107		85-115		
Copper	0.0500	0.0505			101		85-115		
Batch number: 162367050005A	Sample number(s): 8522433,8522435,8522438-8522441								
Arsenic	0.0100	0.0106			106		85-115		
Copper	0.0500	0.0488			98		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16236298706A	Sample number(s): 8522376,8522382,8522388,8522394,8522400,8522406,8522412,8522418,8522424,8522430								
Total Organic Carbon	25	26.42			106		91-113		
Batch number: 16238298704B	Sample number(s): 8522436								
Total Organic Carbon	25	26.85			107		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16228972901A	Sample number(s): 8522377,8522413,8522419,8522425,8522431,8522437								
Sulfate	7.50	7.52			100		90-110		
Batch number: 16228972901B	Sample number(s): 8522383,8522389,8522395,8522401,8522407								
Sulfate	7.50	7.52			100		90-110		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: H162292AA	Sample number(s): 8522376,8522382,8522388,8522394,8522400,8522406,8522412,8522418,8522424,8522430,8522436,8522442 UNSPK: 8522376									
cis-1,2-Dichloroethene	2.63	5.00	8.07	5.00	8.63	109	120	80-120	7	30
Tetrachloroethene	1.79	5.00	7.18	5.00	7.77	108	120	80-120	8	30
Trichloroethene	2.86	5.00	8.35	5.00	8.81	110	119	80-120	5	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:45

Group Number: 1694013

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Vinyl Chloride	0.2 U	5.00	5.20	5.00	5.39	104	108	62-128	4	30
Batch number: 162250009A	Sample number(s): 8522377, 8522383, 8522389, 8522395, 8522413, 8522419, 8522425, 8522431, 8522437 UNSPK: 8522377									
Acetylene	1.0 U	51.2	45.92	51.2	49.76	90	97	61-148	8	20
Ethane	1.0 U	59.2	55.63	59.2	57.65	94	97	74-131	4	30
Ethene	1.0 U	60.8	58.31	60.8	60.43	96	99	72-133	4	30
Methane	647.22	59.8	644.69	59.8	681.25	-3 (2)	57 (2)	73-125	6	30
Batch number: 162287050007A	Sample number(s): 8522378 UNSPK: 8522378									
Copper	0.000356	0.0500	0.0477			95		70-130		
Batch number: 162287050008A	Sample number(s): 8522379 UNSPK: 8522379									
Arsenic	0.00279	0.0100	0.0135			107		70-130		
Batch number: 162307050001A	Sample number(s): 8522410-8522411, 8522414-8522417, 8522420-8522421 UNSPK: P529674									
Arsenic	0.00068 U	0.0100	0.0117			117		70-130		
Copper	0.000873	0.0500	0.0556			110		70-130		
Batch number: 162327050001A	Sample number(s): 8522380, 8522384-8522387, 8522390-8522393 UNSPK: 8522380, P522380									
Arsenic	0.00173	0.0100	0.0115			98		70-130		
Copper	0.00021 U	0.0500	0.0474			95		70-130		
Batch number: 162327050002A	Sample number(s): 8522381, 8522396-8522399, 8522402-8522405 UNSPK: 8522381, P522381									
Arsenic	0.00188	0.0100	0.0119			101		70-130		
Copper	0.00021 U	0.0500	0.0494			99		70-130		
Batch number: 162327050003A	Sample number(s): 8522408-8522409, 8522422-8522423, 8522426-8522429, 8522432, 8522434 UNSPK: 8522408, P522408									
Arsenic	0.0303	0.0100	0.0397			94		70-130		
Copper	0.000251	0.0500	0.0495			99		70-130		
Batch number: 162367050005A	Sample number(s): 8522433, 8522435, 8522438-8522441 UNSPK: P542259									
Arsenic	0.0128	0.0100	0.0241			113		70-130		
Copper	0.323	0.0500	0.384			122 (2)		70-130		
Batch number: 16236298706A	Sample number(s): 8522376, 8522382, 8522388, 8522394, 8522400, 8522406, 8522412, 8522418, 8522424, 8522430 UNSPK: 8522376									
Total Organic Carbon	1.0 U	10	11.3			113		91-113		
Batch number: 16238298704B	Sample number(s): 8522436 UNSPK: P524226									
Total Organic Carbon	3.13	10	14.03			109		91-113		

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:45

Group Number: 1694013

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/l	MS Spike Added mg/l	MS Conc mg/l	MSD Spike Added mg/l	MSD Conc mg/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16228972901A Sulfate	Sample number(s): 8522377,8522413,8522419,8522425,8522431,8522437 2.49	10	12.25			98		UNSPK: 8522377 90-110		
Batch number: 16228972901B Sulfate	Sample number(s): 8522383,8522389,8522395,8522401,8522407 42.25	100	141.77			100		UNSPK: P522368 90-110		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 162287050007A Copper	Sample number(s): 8522378 BKG: 8522378 0.000356	0.0020 U	200* (1)	20
Batch number: 162287050008A Arsenic	Sample number(s): 8522379 BKG: 8522379 0.00279	0.00267	5 (1)	20
Batch number: 162307050001A Arsenic Copper	Sample number(s): 8522410-8522411,8522414-8522417,8522420-8522421 BKG: P529674 0.00068 U 0.000873	0.00068 U 0.000667	0 (1) 27* (1)	20 20
Batch number: 162327050001A Arsenic Copper	Sample number(s): 8522380,8522384-8522387,8522390-8522393 BKG: 8522380, P522380 0.00173 0.00021 U	0.00204 0.00021 U	17 (1) 0 (1)	20 20
Batch number: 162327050002A Arsenic Copper	Sample number(s): 8522381,8522396-8522399,8522402-8522405 BKG: 8522381, P522381 0.00188 0.00021 U	0.00184 0.00021 U	2 (1) 0 (1)	20 20
Batch number: 162327050003A Arsenic Copper	Sample number(s): 8522408-8522409,8522422-8522423,8522426-8522429,8522432,8522434 BKG: 8522408, P522408 0.0303 0.000251	0.0297 0.00021 U	2 200* (1)	20 20
Batch number: 162367050005A Arsenic Copper	Sample number(s): 8522433,8522435,8522438-8522441 BKG: P542259 0.0128 0.323	0.0132 0.333	3 3	20 20
Batch number: 16236298706A Total Organic Carbon	Sample number(s): 8522376,8522382,8522388,8522394,8522400,8522406,8522412,8522418,8522424,8522430 BKG: 8522376 1.0 U	1.0 U	0 (1)	3
Batch number: 16238298704B	Sample number(s): 8522436 BKG: P524226			

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:45

Group Number: 1694013

Laboratory Duplicate (continued)

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Total Organic Carbon	3.13	3.02	3 (1)	3
Batch number: 16228972901A	Sample number(s): 8522377,8522413,8522419,8522425,8522431,8522437	BKG: 8522377		
Sulfate	2.49	2.50	0 (1)	15
Batch number: 16228972901B	Sample number(s): 8522383,8522389,8522395,8522401,8522407	BKG: P522368		
Sulfate	42.25	42.82	1 (1)	15

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H162292AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8522376	99	100	98	95
8522382	100	102	99	98
8522388	101	104	98	98
8522394	98	103	99	97
8522400	101	103	97	95
8522406	101	103	98	96
8522412	99	105	97	97
8522418	101	103	98	96
8522424	100	102	98	95
8522430	100	102	98	97
8522436	100	104	97	98
8522442	99	98	98	95
Blank	101	100	99	96
LCS	104	103	97	97
MS	100	102	99	98
MSD	101	105	100	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 162250009A

	Propene
8522377	96
8522377DL	92
8522383	91
8522383DL	101
8522389	89
8522389DL	101
8522395	90

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:45

Group Number: 1694013

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

	Propene
8522395DL	104
8522413	94
8522413DL	101
8522419	91
8522419DL	101
8522425	94
8522425DL	93
8522431	96
8522431DL	98
8522437	90
8522437DL	102
Blank	107
LCS	109
MS	96
MSD	97
Limits:	44-123

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



Lancaster Laboratories

Boeing Chain of Custody

Acct. # 13419 For Eurofins Lancaster Laboratories use only
 Group # 164408 Sample # 822376-42 8/11/16
 Please print. Instructions on reverse side correspond. 822376-402

1 Client Information		2 Sample Identification		3 Collected		4 Analyses Requested		5 Remarks/Comments	
Site Location: <u>Boeing Seattle, WA</u> Site Project: <u>Developmental Center (SWMU-17)</u> Site Program#: <u>0025217, 099, 039</u> Boeing PM: <u>Lindsey Mahrt</u> Consultant Contact: <u>Chris Kimmel</u> Report To: <u>Lindsey Mahrt & Chris Kimmel</u> Invoice To: <input checked="" type="checkbox"/> Boeing EHS <input type="checkbox"/> Other (specify): Sampler: <u>Devin Brandt & Seawani Huerta</u> # of Coolers: <u>4</u>		No. of Containers Matrix		Date Time		AME (SKSOP-175 Mod) TOC (SMS310C) Sulfate (300.0) TAD Arsenic & Copper (200.8)*		P lot #1 *Field F. Hand	
BDC-05-18-160809	AG	8-9-16	1000	30	X	X	X	X	MMSD
BDC-05-21-160809	AG	8-9-16	1115	11	X	X	X	X	Batch QC
BDC-05-02-160809	AG	8-9-16	1120	10	X	X	X	X	Batch QC
BDC-05-12-160809	AG	8-9-16	1210	9	X	X	X	X	Batch QC
BDC-05-23-160809	AG	8-9-16	1221	8	X	X	X	X	
BDC-05-22-160809	AG	8-9-16	1312	10	X	X	X	X	
BDC-05-19-160809	AG	8-9-16	1320	10	X	X	X	X	
BDC-05-20-160809	AG	8-9-16	1400	10	X	X	X	X	
BDC-05-24-160809	AG	8-9-16	1435	10	X	X	X	X	
BDC-05-16-160809	AG	8-9-16	1440	10	X	X	X	X	
BDC-05-DUPZ-160809	AG	8-9-16	0700	10	X	X	X	X	
Trip Blanks	AG			4					2 per cooler

6 Turnaround Time Requested (please circle)		Relinquished by:		Date/Time		Received by:		Date/Time	
<u>Standard</u>	5 day	<u>Chris Kimmel</u>	<u>8-9-16</u>	<u>1540</u>					<u>7</u>
72 hour	48 hour								
Date needed: _____	24 hour								

Relinquished by commercial carrier (circle):		Temperature upon Receipt:		Custody Seals Intact?:	
UPS	FedEx	<u>1.9-22.5</u>		<u>Yes</u>	No

Client: Boeing

SWMU-17

Delivery and Receipt Information

Delivery Method: Fed Ex Arrival Timestamp: 08/11/2016 9:30
 Number of Packages: 4 Number of Projects: 2
 State/Province of Origin: WA

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	4
Paperwork Enclosed:	Yes	Trip Blank Type:	HCI
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Cory Jeremiah (10469) at 18:31 on 08/11/2016

Samples Chilled Details: SWMU-17

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	4.9	IR	Wet	Y	Bagged	N
2	DT146	2.8	DT	Wet	Y	Bagged	N
3	DT146	1.7	DT	Wet	Y	Bagged	N
4	DT146	5.1	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m³	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Report Date: November 21, 2016

Project: Boeing_DC:SWMU-17 s-ann

Submittal Date: 11/03/2016

Group Number: 1728650

State of Sample Origin: WA

<u>Client Sample Description</u>	Lancaster Labs <u>(LL) #</u>
BDC-05-04-161102 Water	8677723
BDC-05-04-161102 Water	8677724
BDC-05-04-161102 Total Metals Water	8677725
BDC-05-04-161102 Total Metals Water	8677726
BDC-05-04-161102 Dissolved Metals Water	8677727
BDC-05-04-161102 Dissolved Metals Water	8677728
BDC-05-05-161102 Water	8677729
BDC-05-05-161102 Water	8677730
BDC-05-05-161102 Total Metals Water	8677731
BDC-05-05-161102 Total Metals Water	8677732
BDC-05-05-161102 Dissolved Metals Water	8677733
BDC-05-05-161102 Dissolved Metals Water	8677734
BDC-05-02-161102 Water	8677735
BDC-05-02-161102 Water	8677736
BDC-05-02-161102 Total Metals Water	8677737
BDC-05-02-161102 Total Metals Water	8677738
BDC-05-02-161102 Dissolved Metals Water	8677739
BDC-05-02-161102 Dissolved Metals Water	8677740
BDC-05-07-161102 Water	8677741
BDC-05-07-161102 Water	8677742
BDC-05-07-161102 Total Metals Water	8677743
BDC-05-07-161102 Total Metals Water	8677744
BDC-05-07-161102 Dissolved Metals Water	8677745
BDC-05-07-161102 Dissolved Metals Water	8677746
BDC-05-09-161102 Water	8677747
BDC-05-09-161102 Water	8677748
BDC-05-09-161102 Total Metals Water	8677749
BDC-05-09-161102 Total Metals Water	8677750
BDC-05-09-161102 Dissolved Metals Water	8677751
BDC-05-09-161102 Dissolved Metals Water	8677752
BDC-05-10-161102 Water	8677753
BDC-05-10-161102 Water	8677754

BDC-05-10-161102 Total Metals Water	8677755
BDC-05-10-161102 Total Metals Water	8677756
BDC-05-10-161102 Dissolved Metals Water	8677757
BDC-05-10-161102 Dissolved Metals Water	8677758
BDC-05-18-161102 Water	8677759
BDC-05-18-161102 Water	8677760
BDC-05-18-161102 Total Metals Water	8677761
BDC-05-18-161102 Total Metals Water	8677762
BDC-05-18-161102 Dissolved Metals Water	8677763
BDC-05-18-161102 Dissolved Metals Water	8677764
BDC-05-11-161102 Water	8677765
BDC-05-11-161102 Water	8677766
BDC-05-11-161102 Total Metals Water	8677767
BDC-05-11-161102 Total Metals Water	8677768
BDC-05-11-161102 Dissolved Metals Water	8677769
BDC-05-11-161102 Dissolved Metals Water	8677770
BDC-05-21-161102 Water	8677771
BDC-05-21-161102 Water	8677772
BDC-05-21-161102 Total Metals Water	8677773
BDC-05-21-161102 Total Metals Water	8677774
BDC-05-21-161102 Dissolved Metals Water	8677775
BDC-05-21-161102 Dissolved Metals Water	8677776
BDC-DUP3-161102 Water	8677777
BDC-DUP3-161102 Water	8677778
BDC-DUP3-161102 Total Metals Water	8677779
BDC-DUP3-161102 Total Metals Water	8677780
BDC-DUP3-161102 Dissolved Metals Water	8677781
BDC-DUP3-161102 Dissolved Metals Water	8677782
Trip Blank Water	8677783
Trip Blank Water	8677784

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To The Boeing Company
Electronic Copy To Landau

Attn: Lindsey E. Mahrt
Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower

(510) 672-3979

Project Name: Boeing_DC:SWMU-17 s-ann
LL Group #: 1728650

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:**EPA 200.8 rev 5.4, Metals**

Batch #: 163107050022A (Sample number(s): 8677749-8677752, 8677755-8677758, 8677761-8677762 UNSPK: 8677749 BKG: 8677749)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

EPA 200.8 rev 5.4, Metals Dissolved

Batch #: 163107050022A (Sample number(s): 8677749-8677752, 8677755-8677758, 8677761-8677762 UNSPK: 8677749 BKG: 8677749)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Copper

SM 5310 C-2000, Wet Chemistry

Batch #: 16312667602B (Sample number(s): 8677723, 8677729, 8677735, 8677741, 8677747 UNSPK: P672367 BKG: P672367)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

Batch #: 16312667603A (Sample number(s): 8677753, 8677759, 8677765, 8677771, 8677777 UNSPK: P678131 BKG: P678131)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
Total Organic Carbon

Sample Description: BDC-05-04-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677723
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:36 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

DC541

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	1.5	ug/l 0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry EPA 300.0					
00368	Nitrate Nitrogen	14797-55-8	0.10 U	mg/l 0.10	1
SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	7.4	mg/l 1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163124AA	11/08/2016 06:03	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163124AA	11/08/2016 06:03	Matthew S Krause	1
00368	Nitrate Nitrogen	EPA 300.0	1	16308987131B	11/04/2016 04:38	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667602B	11/08/2016 02:30	Drew M Gerhart	1

Sample Description: BDC-05-04-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677724
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:36 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 0.75 J	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16319120131B	11/15/2016 01:25	Hallie Burnett	1

Sample Description: BDC-05-04-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677725
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:36 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050004A	11/21/2016 04:22	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050004	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-04-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677726
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:36 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0078	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050004A	11/21/2016 04:24	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050004	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-04-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677727
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:36 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050004A	11/21/2016 04:25	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050004	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-04-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677728
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:36 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0079	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050004A	11/21/2016 04:27	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050004	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-05-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677729
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:42 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

DC551

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C		ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.8	0.2	1
11996	Trichloroethene	79-01-6	1.5	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000		mg/l	
00273	Total Organic Carbon	n.a.	3.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163124AA	11/08/2016 06:23	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163124AA	11/08/2016 06:23	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667602B	11/08/2016 02:44	Drew M Gerhart	1

Sample Description: BDC-05-05-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677730
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:42 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 35.7	mg/l 1.5	5

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16319120131B	11/16/2016 06:28	Clinton M Wilson	5

Sample Description: BDC-05-05-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677731
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:42 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0029	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050004A	11/21/2016 04:29	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050004	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-05-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677732
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:42 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.00078 J	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050004A	11/21/2016 04:30	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050004	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-05-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677733
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:42 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
06033	Metals Dissolved Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0028	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:31	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-05-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677734
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 12:42 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.00042 J	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:40	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677735
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

DC521

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	1.7	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	6.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163124AA	11/08/2016 06:44	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163124AA	11/08/2016 06:44	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667602B	11/08/2016 02:59	Drew M Gerhart	1

Sample Description: BDC-05-02-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677736
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

DC522

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	7,600 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	10,000	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 11:37	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 16:39	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 13:02	Alexandria M Lanager	1

Sample Description: BDC-05-02-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677737
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:16 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:42	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677738
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:16 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0032	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:44	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677739
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:16 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:49	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-02-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677740
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0022	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:51	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-07-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677741
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:32 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

DC571

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2	0.2	1
11996	Tetrachloroethene	127-18-4	0.8	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.3	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	5.5	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163124AA	11/08/2016 07:04	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163124AA	11/08/2016 07:04	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667602B	11/08/2016 03:29	Drew M Gerhart	1

Sample Description: BDC-05-07-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677742
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:32 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

DC572

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.6 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	6,900 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	8,400		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 11:55	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 17:16	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 13:18	Alexandria M Lanager	1

Sample Description: BDC-05-07-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677743
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:32 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:53	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-07-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677744
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:32 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0022	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:55	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-07-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677745
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:32 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:57	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-07-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677746
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:32 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0020 J	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050021A	11/19/2016 07:59	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050021	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-09-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677747
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:51 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

DC591

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.3	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	5.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163124AA	11/08/2016 07:25	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163124AA	11/08/2016 07:25	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667602B	11/08/2016 03:44	Drew M Gerhart	1

Sample Description: BDC-05-09-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677748
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:51 by SR

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

DC592

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	9.2	1.0	1
07105	Ethene	74-85-1	1.0 J	1.0	1
07105	Methane	74-82-8	5,800 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	7,600	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	2.8	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 12:13	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 17:35	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 13:34	Alexandria M Lanager	1

Sample Description: BDC-05-09-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677749
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:51 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 12:39	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-09-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677750
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:51 by SR

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0092	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 12:48	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-09-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677751
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:51 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 12:50	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-09-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677752
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 13:51 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0087	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 12:52	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-10-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677753
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:32 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5101

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.8	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	7.5	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163124AA	11/08/2016 07:45	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163124AA	11/08/2016 07:45	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667603A	11/08/2016 05:39	Drew M Gerhart	1

Sample Description: BDC-05-10-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677754
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:32 by SR

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5102

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	19	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	5,700 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	6,100	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 12:32	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 17:54	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 13:49	Alexandria M Lanager	1

Sample Description: BDC-05-10-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677755
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:32 by SR The Boeing Company
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Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 12:57	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-10-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677756
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:32 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0218	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 12:59	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-10-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677757
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:32 by SR

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Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 13:01	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-10-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677758
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:32 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0206	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 13:03	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-18-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677759
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:46 by SR

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MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5181

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C			ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	4.1	0.2	1
11996	Tetrachloroethene	127-18-4	1.2	0.2	1
11996	Trichloroethene	79-01-6	1.6	0.2	1
11996	Vinyl Chloride	75-01-4	0.4	0.2	1
Wet Chemistry SM 5310 C-2000			mg/l	mg/l	
00273	Total Organic Carbon	n.a.	2.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/08/2016 23:07	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/08/2016 23:07	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667603A	11/08/2016 06:10	Drew M Gerhart	1

Sample Description: BDC-05-18-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677760
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:46 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5182

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified		ug/l		
07105	Acetylene	74-86-2	1.0 U	1.0	1	
07105	Ethane	74-84-0	1.0 U	1.0	1	
07105	Ethene	74-85-1	1.0 U	1.0	1	
07105	Methane	74-82-8	2,900 E	3.0	1	
Trial ID: DL						
07105	Acetylene	74-86-2	20 U	20	20	
07105	Ethane	74-84-0	20 U	20	20	
07105	Ethene	74-85-1	20 U	20	20	
07105	Methane	74-82-8	3,300	60	20	
Wet Chemistry		EPA 300.0		mg/l		
00228	Sulfate	14808-79-8	2.6	0.30	1	

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 12:50	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 18:12	Johanna C Kennedy	20
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 14:05	Alexandria M Lanager	1

Sample Description: BDC-05-18-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677761
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:46 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 13:05	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-18-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677762
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:46 by SR

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0045	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050022A	11/19/2016 13:07	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050022	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-18-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677763
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:46 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:07	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-18-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677764
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 14:46 by SR

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MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0037	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:16	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-11-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677765
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:15 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5111

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.4	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	9.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/08/2016 23:27	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/08/2016 23:27	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667603A	11/08/2016 06:24	Drew M Gerhart	1

Sample Description: BDC-05-11-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677766
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:15 by SR

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MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5112

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	5.8		1.0	1
07105	Ethene	74-85-1	1.8 J		1.0	1
07105	Methane	74-82-8	11,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	13,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 13:08	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 18:35	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 14:52	Alexandria M Lanager	1

Sample Description: BDC-05-11-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677767
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:15 by SR

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PO Box 3707
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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:17	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-11-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677768
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:15 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0171	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:19	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-11-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677769
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:15 by SR

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Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:24	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-11-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677770
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:15 by SR

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MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0152	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:26	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-21-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677771
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:41 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5211

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.4	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.3	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	9.5	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/08/2016 23:47	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/08/2016 23:47	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667603A	11/08/2016 06:38	Drew M Gerhart	1

Sample Description: BDC-05-21-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677772
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:41 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

D5212

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.8 J	1.0	1
07105	Ethene	74-85-1	1.2 J	1.0	1
07105	Methane	74-82-8	6,100 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	8,800	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 13:46	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 18:53	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 15:08	Alexandria M Lanager	1

Sample Description: BDC-05-21-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677773
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:41 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:28	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-21-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677774
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:41 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0081	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:29	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-21-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677775
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:41 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:31	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-21-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677776
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 15:41 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0088	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050023A	11/18/2016 19:33	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050023	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-DUP3-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677777
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 16:01 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30
Reported: 11/21/2016 10:53

DFD31

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	0.4	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.3	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	9.6	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 00:07	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 00:07	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667603A	11/08/2016 06:52	Drew M Gerhart	1

Sample Description: BDC-DUP3-161102 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677778
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 16:01 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

DFD32

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.9 J		1.0	1
07105	Ethene	74-85-1	1.3 J		1.0	1
07105	Methane	74-82-8	6,300 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	8,300		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 14:05	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163090014A	11/07/2016 19:11	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601A	11/15/2016 15:24	Alexandria M Lanager	1

Sample Description: BDC-DUP3-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677779
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 16:01 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:05	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-DUP3-161102 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677780
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 16:01 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0085	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:07	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-DUP3-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677781
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 16:01 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:08	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-DUP3-161102 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677782
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016 16:01 by SR The Boeing Company
PO Box 3707
Submitted: 11/03/2016 09:30 MC 1W-12
Reported: 11/21/2016 10:53 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0083	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:13	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: Trip Blank Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677783
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

DCTB1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/08/2016 21:24	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/08/2016 21:24	Matthew S Krause	1

Sample Description: Trip Blank Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8677784
LL Group # 1728650
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/02/2016

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/03/2016 09:30

Reported: 11/21/2016 10:53

DCTB2

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	3.0 U	3.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163090014A	11/04/2016 11:19	Johanna C Kennedy	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 10:53

Group Number: 1728650

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ
	ug/l	ug/l
Batch number: H163124AA	Sample number(s): 8677723,8677729,8677735,8677741,8677747,8677753	
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Batch number: H163132AA	Sample number(s): 8677759,8677765,8677771,8677777,8677783	
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 163090014A	Sample number(s): 8677736,8677742,8677748,8677754,8677760,8677766,8677772,8677778,8677784	
Acetylene	1.0 U	1.0
Ethane	1.0 U	1.0
Ethene	1.0 U	1.0
Methane	3.0 U	3.0
	mg/l	mg/l
Batch number: 163107050004A	Sample number(s): 8677725-8677728,8677731-8677732	
Arsenic	0.00040 U	0.00040
Copper	0.00034 U	0.00034
Batch number: 163107050021A	Sample number(s): 8677733-8677734,8677737-8677740,8677743-8677746	
Arsenic	0.00040 U	0.00040
Copper	0.00021 U	0.00021
Batch number: 163107050022A	Sample number(s): 8677749-8677752,8677755-8677758,8677761-8677762	
Arsenic	0.00040 U	0.00040
Copper	0.00021 U	0.00021
Batch number: 163107050023A	Sample number(s): 8677763-8677764,8677767-8677770,8677773-8677776	
Arsenic	0.00040 U	0.00040
Copper	0.00034 U	0.00034
Batch number: 163107050028A	Sample number(s): 8677779-8677782	
Arsenic	0.00040 U	0.00040
Copper	0.00034 U	0.00034
Analysis Name	Result	LOQ

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 10:53

Group Number: 1728650

Method Blank (continued)

Analysis Name	Result	LOQ
	mg/l	mg/l
Batch number: 16308987131B	Sample number(s): 8677723	
Nitrate Nitrogen	0.10 U	0.10
Batch number: 16312667602B	Sample number(s): 8677723,8677729,8677735,8677741,8677747	
Total Organic Carbon	1.0 U	1.0
Batch number: 16312667603A	Sample number(s): 8677753,8677759,8677765,8677771,8677777	
Total Organic Carbon	1.0 U	1.0
Analysis Name	Result	MDL
	mg/l	mg/l
Batch number: 16319120131B	Sample number(s): 8677724,8677730	
Sulfate	0.30 U	0.30
Batch number: 16320972601A	Sample number(s): 8677736,8677742,8677748,8677754,8677760,8677766,8677772,8677778	
Sulfate	0.30 U	0.30

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: H163124AA	Sample number(s): 8677723,8677729,8677735,8677741,8677747,8677753								
cis-1,2-Dichloroethene	5.00	4.78	5.00	4.71	96	94	80-120	1	30
Tetrachloroethene	5.00	4.63	5.00	4.69	93	94	80-120	1	30
Trichloroethene	5.00	4.90	5.00	4.84	98	97	80-120	1	30
Vinyl Chloride	5.00	3.83	5.00	3.70	77	74	62-128	4	30
Batch number: H163132AA	Sample number(s): 8677759,8677765,8677771,8677777,8677783								
cis-1,2-Dichloroethene	5.00	4.79			96		80-120		
Tetrachloroethene	5.00	4.52			90		80-120		
Trichloroethene	5.00	4.87			97		80-120		
Vinyl Chloride	5.00	3.71			74		62-128		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 163090014A	Sample number(s): 8677736,8677742,8677748,8677754,8677760,8677766,8677772,8677778,8677784								
Acetylene	51.2	50.91	51.2	49.46	99	97	61-148	3	20
Ethane	59.2	60.11	59.2	60.15	102	102	85-115	0	20
Ethene	60.8	61.41	60.8	61.6	101	101	83-115	0	20
Methane	59.8	62.43	59.8	62.85	104	105	85-115	1	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 163107050004A	Sample number(s): 8677725-8677728,8677731-8677732								
Arsenic	0.0100	0.00981			98		85-115		
Copper	0.0500	0.0473			95		85-115		

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 10:53

Group Number: 1728650

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/l	LCS Conc mg/l	LCSD Spike Added mg/l	LCSD Conc mg/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 163107050021A	Sample number(s): 8677733-8677734,8677737-8677740,8677743-8677746								
Arsenic	0.0100	0.0106			106		85-115		
Copper	0.0500	0.0506			101		85-115		
Batch number: 163107050022A	Sample number(s): 8677749-8677752,8677755-8677758,8677761-8677762								
Arsenic	0.0100	0.00971			97		85-115		
Copper	0.0500	0.0520			104		85-115		
Batch number: 163107050023A	Sample number(s): 8677763-8677764,8677767-8677770,8677773-8677776								
Arsenic	0.0100	0.0100			100		85-115		
Copper	0.0500	0.0486			97		85-115		
Batch number: 163107050028A	Sample number(s): 8677779-8677782								
Arsenic	0.0100	0.00971			97		85-115		
Copper	0.0500	0.0495			99		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16308987131B	Sample number(s): 8677723								
Nitrate Nitrogen	0.750	0.746			100		90-110		
Batch number: 16312667602B	Sample number(s): 8677723,8677729,8677735,8677741,8677747								
Total Organic Carbon	25	25.07			100		91-113		
Batch number: 16312667603A	Sample number(s): 8677753,8677759,8677765,8677771,8677777								
Total Organic Carbon	25	25.37			101		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16319120131B	Sample number(s): 8677724,8677730								
Sulfate	7.50	7.36			98		90-110		
Batch number: 16320972601A	Sample number(s): 8677736,8677742,8677748,8677754,8677760,8677766,8677772,8677778								
Sulfate	7.50	7.47			100		90-110		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: H163132AA	Sample number(s): 8677759,8677765,8677771,8677777,8677783 UNSPK: P679867									
cis-1,2-Dichloroethene	0.130	5.00	5.41	5.00	5.61	106	110	80-120	4	30
Tetrachloroethene	0.2 U	5.00	5.37	5.00	5.56	107	111	80-120	3	30
Trichloroethene	0.2 U	5.00	5.51	5.00	5.75	110	115	80-120	4	30
Vinyl Chloride	0.628	5.00	5.01	5.00	5.23	88	92	62-128	4	30

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 10:53

Group Number: 1728650

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 163107050004A	Sample number(s): 8677725-8677728,8677731-8677732 UNSPK: P677180									
Arsenic	0.000785	0.0100	0.0111			103		70-130		
Copper	0.0357	0.0500	0.0861			101		70-130		
Batch number: 163107050021A	Sample number(s): 8677733-8677734,8677737-8677740,8677743-8677746 UNSPK: 8677733, P677733									
Arsenic	0.000474	0.0100	0.0103			99		70-130		
Copper	0.00282	0.0500	0.0515			97		70-130		
Batch number: 163107050022A	Sample number(s): 8677749-8677752,8677755-8677758,8677761-8677762 UNSPK: 8677749, P677749									
Arsenic	0.00977	0.0100	0.0202			104		70-130		
Copper	0.000490	0.0500	0.0535			106		70-130		
Batch number: 163107050023A	Sample number(s): 8677763-8677764,8677767-8677770,8677773-8677776 UNSPK: 8677763, P677763									
Arsenic	0.00389	0.0100	0.0138			99		70-130		
Copper	0.00034 U	0.0500	0.0495			99		70-130		
Batch number: 163107050028A	Sample number(s): 8677779-8677782 UNSPK: P679889									
Arsenic	0.00168	0.0100	0.0118			101		70-130		
Copper	0.00034 U	0.0500	0.0497			99		70-130		
Batch number: 16308987131B	Sample number(s): 8677723 UNSPK: P677430									
Nitrate Nitrogen	10.16	5.00	14.87			94		90-110		
Batch number: 16312667602B	Sample number(s): 8677723,8677729,8677735,8677741,8677747 UNSPK: P672367									
Total Organic Carbon	1.37	10	8.69			73*		91-113		
Batch number: 16312667603A	Sample number(s): 8677753,8677759,8677765,8677771,8677777 UNSPK: P678131									
Total Organic Carbon	2.30	10	7.13			48*		91-113		
Batch number: 16319120131B	Sample number(s): 8677724,8677730 UNSPK: P672283									
Sulfate	7.34	50	57.12			100		90-110		
Batch number: 16320972601A	Sample number(s): 8677736,8677742,8677748,8677754,8677760,8677766,8677772,8677778 UNSPK: P678783									
Sulfate	0.30 U	10	10.48			105		90-110		

*- Outside of specification

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- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 10:53

Group Number: 1728650

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 163107050004A	Sample number(s): 8677725-8677728,8677731-8677732 BKG: P677180			
Arsenic	0.000785	0.000757	4 (1)	20
Copper	0.0357	0.0374	5	20
Batch number: 163107050021A	Sample number(s): 8677733-8677734,8677737-8677740,8677743-8677746 BKG: 8677733, P677733			
Arsenic	0.000474	0.000405	16 (1)	20
Copper	0.00282	0.00282	0 (1)	20
Batch number: 163107050022A	Sample number(s): 8677749-8677752,8677755-8677758,8677761-8677762 BKG: 8677749, P677749			
Arsenic	0.00977	0.0100	3 (1)	20
Copper	0.000490	0.000705	36* (1)	20
Batch number: 163107050023A	Sample number(s): 8677763-8677764,8677767-8677770,8677773-8677776 BKG: 8677763, P677763			
Arsenic	0.00389	0.00370	5 (1)	20
Copper	0.00034 U	0.00034 U	0 (1)	20
Batch number: 163107050028A	Sample number(s): 8677779-8677782 BKG: P679889			
Arsenic	0.00168	0.00190	12 (1)	20
Copper	0.00034 U	0.00034 U	0 (1)	20
	mg/l	mg/l		
Batch number: 16308987131B	Sample number(s): 8677723 BKG: P677430			
Nitrate Nitrogen	10.16	10.04	1	15
Batch number: 16312667602B	Sample number(s): 8677723,8677729,8677735,8677741,8677747 BKG: P672367			
Total Organic Carbon	1.37	1.37	0 (1)	3
Batch number: 16312667603A	Sample number(s): 8677753,8677759,8677765,8677771,8677777 BKG: P678131			
Total Organic Carbon	2.30	2.21	4* (1)	3
	mg/l	mg/l		
Batch number: 16319120131B	Sample number(s): 8677724,8677730 BKG: P672283			
Sulfate	7.34	6.95	5 (1)	15
Batch number: 16320972601A	Sample number(s): 8677736,8677742,8677748,8677754,8677760,8677766,8677772,8677778 BKG: P678783			
Sulfate	0.30 U	0.30 U	0 (1)	15

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 10:53

Group Number: 1728650

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H163124AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8677723	99	106	99	95
8677729	100	105	98	95
8677735	98	106	101	95
8677741	101	107	99	96
8677747	100	106	98	95
8677753	100	103	98	97
Blank	98	106	98	95
LCS	101	106	98	99
LCSD	97	102	99	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H163132AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8677759	98	103	97	94
8677765	103	107	97	98
8677771	101	107	96	96
8677777	99	104	96	96
8677783	101	113	96	98
Blank	102	109	96	97
LCS	101	106	96	100
MS	99	107	99	102
MSD	98	106	98	102
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 163090014A

	Propene
8677736	86
8677736DL	97
8677742	90
8677742DL	95
8677748	92
8677748DL	96
8677754	90
8677754DL	93
8677760	96
8677760DL	100
8677766	95
8677766DL	93
8677772	86
8677772DL	97
8677778	88

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 10:53

Group Number: 1728650

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

	Propene
8677778DL	97
8677784	104
Blank	105
LCS	107
LCSD	106
Limits:	44-123

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Boeing Chain of Custody



Lancaster Laboratories

Acct. # 13014 Group # 17850 Sample # 867723-84
 For Eurofins Lancaster Laboratories use only. Please print. Instructions on reverse side correspond.

1 Client Information		2 Sample Identification		3 Collected		4 Analyses Requested		5 Remarks/Comments													
Site Location:	Site Project:	Site Program#:	Boeing PM:	Consultant Contact:	Report To:	Invoice To:	Sampler:	No. of Containers	Matrix	Date	Time	AMFC (RSK SOP-175 Mod)	TOC (SM S310)	Nitrate (300.0)	AS + Cu (200.8)	Relinquished by:	Date/Time	Received by:	Date/Time		
Tukwila, WA	Boeing Developmental Center	SWMU-17/0025217-099.039	Lindsey Mahrt	Chris Kimmel	Lindsey Mahrt, Chris Kimmel	<input checked="" type="checkbox"/> Boeing EHS <input type="checkbox"/> Other (specify):	Stephanie Renardy, Jeovani Huerta-Aula # of Coolers: 1	91	AG	11/2/16	1230	X	X	X	X	SAR	11/2/16	1700		7	
								91	AG	11/2/16	1242	X	X	X	X						
								11	AG	11/2/16	1316	X	X	X	X						
								11	AG	11/2/16	1332	X	X	X	X						
								11	AG	11/2/16	1351	X	X	X	X						
								11	AG	11/2/16	1432	X	X	X	X						
								11	AG	11/2/16	1440	X	X	X	X						
								11	AG	11/2/16	1515	X	X	X	X						
								11	AG	11/2/16	1541	X	X	X	X						
								11	AG	11/2/16	1601	X	X	X	X						
								2	AG	-	-	X	X	X	X						
6 Turnaround Time Requested (please circle)		Standard		5 day		4 day															
Date needed:		72 hour		48 hour		24 hour															

Short Hold
 Nitrate
 *Dissolved Metals volumes have been field filtered.

Relinquished by commercial carrier (circle):
 UPS FedEx Other:
 Relinquished by: SAR
 Received by: SAR
 Temperature upon Receipt: 0.7°C
 Custody Seals Intact?: Yes No

1728650

Kay Hower

From: Stephanie Renando <SRenando@landauinc.com>
Sent: Friday, November 04, 2016 1:41 PM
To: Kay Hower; Chris Kimmel
Subject: RE: Acknowledgement(1728650, Boeing_DC:SWMU-17 s-ann, 11/03/2016 09:30:00)
Attachments: SWMU-17 COC_A_REV1_11.4.16.pdf

Kay,

It looks like trip blanks have been analyzed for RSK-175 during previous events at DC. I was not aware of this but since it is already what was in place, let's go ahead and run the blanks for AMEE (RSK-175) (See revised COC attached). Will you have enough volume with just the 2 VOA's that were submitted?

Stephanie Renando
Landau Associates

Ext. 199
Direct: (425) 329-0252

From: Kay Hower [mailto:KayHower@eurofinsus.com]
Sent: Friday, November 04, 2016 8:31 AM
To: Chris Kimmel <CKimmel@landauinc.com>
Cc: Stephanie Renando <SRenando@landauinc.com>
Subject: Acknowledgement(1728650, Boeing_DC:SWMU-17 s-ann, 11/03/2016 09:30:00)

Hi Chris,

The trip blank is marked for all analyses. We have entered for 8260C and dissolved gases (AMEE). Please confirm.

Thanks,
Kay

Notify us [here](#) to report this email as spam.

Boeing Chain of Custody



Lancaster Laboratories

For Eurofins Lancaster Laboratories use only
 Group # _____ Sample # _____
 Acct. # _____
 Please print. Instructions on reverse side correspond.

1 Client Information				4 Analyses Requested										5 Remarks/Comments			
Site Location: <u>Fort Pitt</u>														* Do not add metallic volume, have been field filtered.			
Site Project: <u>822502 People's Medical Center</u>																	
Site Program#: <u>SWMU-17-0025217-099-02</u>														Nitrate (300.0) Sulfate (300.0) TOC (SM-100) AMF (ASK-F75M)			
Boeing PM: <u>L. K. Kimmel</u>																	
Consultant Contact: <u>L. K. Kimmel</u>														VOC's (82600) AMF (ASK-F75M)			
Report To: <u>L. K. Kimmel</u>																	
Invoice To: <input checked="" type="checkbox"/> Boeing EHS <input type="checkbox"/> Other (specify): _____														VOC's (82600) AMF (ASK-F75M)			
Sampler: <u>John Remondy</u> <input type="checkbox"/> Analytical <input type="checkbox"/> Adm. # of Coolers: _____																	
2 Sample Identification		3 Collected		3 Matrix		3 No. of Containers											
Date	Time	Date	Time	Matrix	No. of Containers												
BDC-05-04-110102	1230	11/2/10	1230	AG	1												
BDC-05-05-110102	1240	11/2/10	1240	AG	1												
BDC-05-02-110102	1300	11/2/10	1300	AG	1												
BDC-05-07-110102	1330	11/2/10	1330	AG	1												
BDC-05-09-110102	1351	11/2/10	1351	AG	1												
BDC-05-10-110102	1430	11/2/10	1430	AG	1												
BDC-05-18-110102	1440	11/2/10	1440	AG	1												
BDC-05-11-110102	1515	11/2/10	1515	AG	1												
BDC-05-21-110102	1544	11/2/10	1544	AG	1												
BDC-DUPS-110102	1601	11/2/10	1601	AG	1												
TRIP BLANKS	-	-	-	AG	2												
6 Turnaround Time Requested (please circle)						5 day		4 day		24 hour		72 hour		Date needed: _____			
Standard						5 day		4 day		24 hour		72 hour		Date needed: _____			

The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.
 Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-855-2300
 Issued by Dept. 40 Management 7069 02

Client: Boeing

Boeing Developmental Center

Delivery and Receipt Information

Delivery Method:	<u>UPS</u>	Arrival Timestamp:	<u>11/03/2016 9:30</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>WA</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace \geq 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCI
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by William Richardson (12178) at 10:54 on 11/03/2016

Samples Chilled Details: Boeing Developmental Center

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

<u>Cooler #</u>	<u>Thermometer ID</u>	<u>Corrected Temp</u>	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	DT146	0.7	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Report Date: November 29, 2016

Project: Boeing_DC:SWMU-17 s-ann

Submittal Date: 11/04/2016

Group Number: 1729222

State of Sample Origin: WA

<u>Client Sample Description</u>	Lancaster Labs <u>(LL) #</u>
BDC-05-23-161103 Water	8679819
BDC-05-23-161103 Water	8679820
BDC-05-23-161103 Total Metals Water	8679821
BDC-05-23-161103 Total Metals Water	8679822
BDC-05-23-161103 Dissolved Metals Water	8679823
BDC-05-23-161103 Dissolved Metals Water	8679824
BDC-05-03-161103 Water	8679825
BDC-05-03-161103 Water	8679826
BDC-05-03-161103 Total Metals Water	8679827
BDC-05-03-161103 Total Metals Water	8679828
BDC-05-03-161103 Dissolved Metals Water	8679829
BDC-05-03-161103 Dissolved Metals Water	8679830
BDC-05-22-161103 Water	8679831
BDC-05-22-161103 Water	8679832
BDC-05-22-161103 Total Metals Water	8679833
BDC-05-22-161103 Total Metals Water	8679834
BDC-05-22-161103 Dissolved Metals Water	8679835
BDC-05-22-161103 Dissolved Metals Water	8679836
BDC-05-20-161103 Water	8679837
BDC-05-20-161103 Water	8679838
BDC-05-20-161103 Total Metals Water	8679839
BDC-05-20-161103 Total Metals Water	8679840
BDC-05-20-161103 Dissolved Metals Water	8679841
BDC-05-20-161103 Dissolved Metals Water	8679842
BDC-05-12-161103 Water	8679843
BDC-05-12-161103 Water	8679844
BDC-05-12-161103 Total Metals Water	8679845
BDC-05-12-161103 Total Metals Water	8679846
BDC-05-12-161103 Dissolved Metals Water	8679847
BDC-05-12-161103 Dissolved Metals Water	8679848
BDC-05-19-161103 Water	8679849
BDC-05-19-161103 Water	8679850

BDC-05-19-161103 Total Metals Water	8679851
BDC-05-19-161103 Total Metals Water	8679852
BDC-05-19-161103 Dissolved Metals Water	8679853
BDC-05-19-161103 Dissolved Metals Water	8679854
BDC-05-17-161103 Water	8679855
BDC-05-17-161103 Water	8679856
BDC-05-17-161103 Total Metals Water	8679857
BDC-05-17-161103 Total Metals Water	8679858
BDC-05-17-161103 Dissolved Metals Water	8679859
BDC-05-17-161103 Dissolved Metals Water	8679860
BDC-05-08-161103 Water	8679861
BDC-05-08-161103 Water	8679862
BDC-05-16-161103 Water	8679867
BDC-05-16-161103 Water	8679868
BDC-05-16-161103 Total Metals Water	8679869
BDC-05-16-161103 Total Metals Water	8679870
BDC-05-16-161103 Dissolved Metals Water	8679871
BDC-05-16-161103 Dissolved Metals Water	8679872
BDC-05-13-161103 Water	8679873
BDC-05-13-161103 Water	8679874
BDC-05-13-161103 Total Metals Water	8679875
BDC-05-13-161103 Total Metals Water	8679876
BDC-05-13-161103 Dissolved Metals Water	8679877
BDC-05-13-161103 Dissolved Metals Water	8679878
BDC-05-15-161103 Water	8679879
BDC-05-15-161103 Water	8679880
BDC-05-15-161103 Total Metals Water	8679881
BDC-05-15-161103 Total Metals Water	8679882
BDC-05-15-161103 Dissolved Metals Water	8679883
BDC-05-15-161103 Dissolved Metals Water	8679884
BDC-05-24-161103 Water	8679885
BDC-05-24-161103 Water	8679886
BDC-05-24-161103 Total Metals Water	8679887
BDC-05-24-161103 Total Metals Water	8679888
BDC-05-24-161103 Dissolved Metals Water	8679889
BDC-05-24-161103 Dissolved Metals Water	8679890
BDC-05-14-161103 Water	8679891
BDC-05-14-161103 Water	8679892
BDC-05-14-161103 Total Metals Water	8679893
BDC-05-14-161103 Total Metals Water	8679894
BDC-05-14-161103 Dissolved Metals Water	8679895
BDC-05-14-161103 Dissolved Metals Water	8679896
Trip Blank Water	8679897

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To The Boeing Company
Electronic Copy To Landau

Attn: Lindsey E. Mahrt
Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower

(510) 672-3979

Project Name: Boeing_DC:SWMU-17 s-ann
LL Group #: 1729222

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:**RSKSOP-175 modified, GC Miscellaneous**

Batch #: 163120012A (Sample number(s): 8679826, 8679838, 8679844, 8679850, 8679856, 8679868, 8679874, 8679880, 8679886, 8679892 UNSPK: P678783)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Methane

EPA 200.8 rev 5.4, Metals

Batch #: 163107050027A (Sample number(s): 8679877-8679878, 8679881-8679884, 8679887-8679888 UNSPK: 8679877 BKG: 8679877)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Copper

EPA 200.8 rev 5.4, Metals Dissolved

Batch #: 163107050027A (Sample number(s): 8679877-8679878, 8679881-8679884, 8679887-8679888 UNSPK: 8679877 BKG: 8679877)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Copper

SM 5310 C-2000, Wet Chemistry

Batch #: 16312667605B (Sample number(s): 8679819, 8679825, 8679831, 8679837 UNSPK: P678013 BKG: P678013)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Sample Description: BDC-05-23-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679819
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:06 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5231

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11996	cis-1,2-Dichloroethene	156-59-2	3.7	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.5	0.2	1
Wet Chemistry SM 5310 C-2000					
00273	Total Organic Carbon	n.a.	7.4	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 00:28	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 00:28	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667605B	11/08/2016 06:20	Drew M Gerhart	1

Sample Description: BDC-05-23-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679820
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:06 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

D5232

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 4.2	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 18:33	Alexandria M Lanager	1

Sample Description: BDC-05-23-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679821
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:06 by SR

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0030	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 13:56	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-23-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679822
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:06 by SR

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PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0233	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:05	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-23-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679823
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:06 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:07	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-23-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679824
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:06 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0226	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:09	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-03-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679825
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

DC531

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C		ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	1.4	0.2	1
11996	Trichloroethene	79-01-6	0.3	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000		mg/l	
00273	Total Organic Carbon	n.a.	2.3	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 00:48	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 00:48	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667605B	11/08/2016 06:33	Drew M Gerhart	1

Sample Description: BDC-05-03-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679826
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

DC532

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	310	3.0	1
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	7.7	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 15:43	Johanna C Kennedy	1
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 18:49	Alexandria M Lanager	1

Sample Description: BDC-05-03-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679827
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:15	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-03-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679828
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0065	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:16	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-03-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679829
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:18	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-03-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679830
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0058	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:20	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-22-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679831
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:46 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

D5221

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	7.0	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.3	0.2	1
11996	Vinyl Chloride	75-01-4	0.8	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	5.7	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 01:08	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 01:08	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667605B	11/08/2016 07:01	Drew M Gerhart	1

Sample Description: BDC-05-22-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679832
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:46 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

D5222

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Wet Chemistry Sulfate	EPA 300.0 14808-79-8	mg/l 0.57 J	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 19:04	Alexandria M Lanager	1

Sample Description: BDC-05-22-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679833
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:46 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:22	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-22-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679834
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:46 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0249	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050024A	11/19/2016 14:24	Scott P Cuff	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050024	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-22-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679835
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:46 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
06033	Metals Dissolved Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0039	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:11	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-22-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679836
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 09:46 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0253	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:20	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-20-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679837
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5201

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.4	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	14.1	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 01:29	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 01:29	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667605B	11/08/2016 07:15	Drew M Gerhart	1

Sample Description: BDC-05-20-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679838
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5202

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	2.5 J		1.0	1
07105	Ethene	74-85-1	5.2		1.0	1
07105	Methane	74-82-8	7,200 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	8,900		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 16:00	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 11:54	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 19:20	Alexandria M Lanager	1

Sample Description: BDC-05-20-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679839
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:22	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-20-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679840
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0273	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:24	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-20-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679841
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:21 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:29	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-20-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679842
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0275	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:31	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-12-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679843
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

D5121

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	10.6	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 01:49	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 01:49	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 08:34	Drew M Gerhart	1

Sample Description: BDC-05-12-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679844
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5122

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	2.8 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	10,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50 U		50	50
07105	Ethane	74-84-0	50 U		50	50
07105	Ethene	74-85-1	50 U		50	50
07105	Methane	74-82-8	12,000		150	50
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 16:17	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 12:09	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 19:36	Alexandria M Lanager	1

Sample Description: BDC-05-12-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679845
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:33	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-12-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679846
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:22 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0156	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:35	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-12-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679847
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:36	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-12-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679848
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 10:22 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0143	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050025A	11/19/2016 16:38	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050025	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-19-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679849
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5191

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	12.9	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 02:10	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 02:10	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 08:48	Drew M Gerhart	1

Sample Description: BDC-05-19-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679850
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5192

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	1.0 U		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	15,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	18,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 J		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 16:34	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 12:25	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 19:52	Alexandria M Lanager	1

Sample Description: BDC-05-19-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679851
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 00:59	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-19-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679852
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0117	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:01	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-19-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679853
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:03	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-19-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679854
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0104	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:08	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-17-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679855
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:26 by SR

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PO Box 3707
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Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5171

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.9	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	19.9	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 02:30	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 02:30	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 09:01	Drew M Gerhart	1

Sample Description: BDC-05-17-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679856
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:26 by SR

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MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5172

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	7.6	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	15,000 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	200 U	200	200
07105	Ethane	74-84-0	200 U	200	200
07105	Ethene	74-85-1	200 U	200	200
07105	Methane	74-82-8	19,000	600	200
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 16:51	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 12:40	Johanna C Kennedy	200
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 20:39	Alexandria M Lanager	1

Sample Description: BDC-05-17-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679857
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:26 by SR

The Boeing Company
PO Box 3707
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Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:09	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-17-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679858
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:26 by SR

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MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0405	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:11	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-17-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679859
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:26 by SR

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Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:13	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-17-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679860
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 11:26 by SR

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Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0350	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:15	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-08-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679861
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:12 by SR

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MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

DC581

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.5	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	4.7	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 02:51	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 02:51	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 09:29	Drew M Gerhart	1

Sample Description: BDC-05-08-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679862
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:12 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

DC582

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
00228	Sulfate	14808-79-8	0.30 U	mg/l 0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16320972602A	11/15/2016 20:55	Alexandria M Lanager	1

Sample Description: BDC-05-16-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679867
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5161

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.6	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	13.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/08/2016 22:05	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/08/2016 22:05	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 07:54	Drew M Gerhart	1

Sample Description: BDC-05-16-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679868
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5162

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	6.9	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	10,000 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	100 U	100	100
07105	Ethane	74-84-0	100 U	100	100
07105	Ethene	74-85-1	100 U	100	100
07105	Methane	74-82-8	13,000	300	100
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 17:25	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 12:55	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16320972601B	11/15/2016 16:11	Alexandria M Lanager	1

Sample Description: BDC-05-16-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679869
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:16 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

D5163

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 01:16	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-16-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679870
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

D5164

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0224	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163207050004A	11/17/2016 04:22	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163207050004	11/16/2016 06:11	James L Mertz	1

Sample Description: BDC-05-16-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679871
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

D5165

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:22	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-16-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679872
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:16 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

D5166

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0207	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163207050004A	11/17/2016 04:06	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163207050004	11/16/2016 06:11	James L Mertz	1

Sample Description: BDC-05-13-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679873
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:52 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5131

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	1.0	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	12.2	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 03:11	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 03:11	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 09:42	Drew M Gerhart	1

Sample Description: BDC-05-13-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679874
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:52 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5132

CAT No.	Analysis Name	CAS Number	Result	Method	Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l		ug/l	
07105	Acetylene	74-86-2	1.0 U		1.0	1
07105	Ethane	74-84-0	2.3 J		1.0	1
07105	Ethene	74-85-1	1.0 U		1.0	1
07105	Methane	74-82-8	12,000 E		3.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100 U		100	100
07105	Ethane	74-84-0	100 U		100	100
07105	Ethene	74-85-1	100 U		100	100
07105	Methane	74-82-8	15,000		300	100
Wet Chemistry		EPA 300.0	mg/l		mg/l	
00228	Sulfate	14808-79-8	0.30 U		0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 17:41	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 13:11	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16320972602A	11/15/2016 21:42	Alexandria M Lanager	1

Sample Description: BDC-05-13-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679875
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:52 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050026A	11/21/2016 00:51	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050026	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-13-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679876
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:52 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0231	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163207050004A	11/17/2016 04:18	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163207050004	11/16/2016 06:11	James L Mertz	1

Sample Description: BDC-05-13-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679877
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:52 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	Metals Dissolved	EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:03	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-13-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679878
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 12:52 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0198	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:11	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-15-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679879
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 13:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5151

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	22.5	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 03:31	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 03:31	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 09:55	Drew M Gerhart	1

Sample Description: BDC-05-15-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679880
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 13:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5152

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	9.4	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	11,000 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	100 U	100	100
07105	Ethane	74-84-0	100 U	100	100
07105	Ethene	74-85-1	100 U	100	100
07105	Methane	74-82-8	15,000	300	100
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 17:58	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 13:26	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16320972602A	11/15/2016 21:58	Alexandria M Lanager	1

Sample Description: BDC-05-15-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679881
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 13:21 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:13	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-15-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679882
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 13:21 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0471	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:14	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-15-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679883
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 13:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
06033	Metals Dissolved Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0021	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:20	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-15-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679884
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 13:21 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0441	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:21	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-24-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679885
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5241

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.7	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2	0.2	1
11996	Vinyl Chloride	75-01-4	0.8	0.2	1
Wet Chemistry	SM 5310 C-2000		mg/l	mg/l	
00273	Total Organic Carbon	n.a.	4.9	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 03:51	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 03:51	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 10:09	Drew M Gerhart	1

Sample Description: BDC-05-24-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679886
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5242

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.3 J	1.0	1
07105	Ethene	74-85-1	1.9 J	1.0	1
07105	Methane	74-82-8	9,100 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	50 U	50	50
07105	Ethane	74-84-0	50 U	50	50
07105	Ethene	74-85-1	50 U	50	50
07105	Methane	74-82-8	12,000	150	50
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.80 J	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 18:15	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 13:41	Johanna C Kennedy	50
00228	Sulfate	EPA 300.0	1	16320972602A	11/15/2016 22:13	Alexandria M Lanager	1

Sample Description: BDC-05-24-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679887
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:23	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-24-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679888
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:02 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0020	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050027A	11/18/2016 18:25	Patrick J Engle	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050027	11/08/2016 16:20	JoElla L Rice	1

Sample Description: BDC-05-24-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679889
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:02 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved		EPA 200.8 rev 5.4	mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 16:56	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-24-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679890
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:02 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0019 J	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:15	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-14-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679891
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:11 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5141

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1
Wet Chemistry		SM 5310 C-2000	mg/l	mg/l	
00273	Total Organic Carbon	n.a.	16.0	1.0	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/09/2016 04:12	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/09/2016 04:12	Matthew S Krause	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16312667606A	11/08/2016 10:22	Drew M Gerhart	1

Sample Description: BDC-05-14-161103 Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679892
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:11 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00
Reported: 11/29/2016 12:49

D5142

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Miscellaneous		RSKSOP-175 modified	ug/l	ug/l	
07105	Acetylene	74-86-2	1.0 U	1.0	1
07105	Ethane	74-84-0	1.0 U	1.0	1
07105	Ethene	74-85-1	1.0 U	1.0	1
07105	Methane	74-82-8	12,000 E	3.0	1
Trial ID: DL					
07105	Acetylene	74-86-2	100 U	100	100
07105	Ethane	74-84-0	100 U	100	100
07105	Ethene	74-85-1	100 U	100	100
07105	Methane	74-82-8	17,000	300	100
Wet Chemistry		EPA 300.0	mg/l	mg/l	
00228	Sulfate	14808-79-8	0.30 U	0.30	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163120012A	11/07/2016 18:32	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163120012A	11/08/2016 14:12	Johanna C Kennedy	100
00228	Sulfate	EPA 300.0	1	16320972602A	11/15/2016 22:29	Alexandria M Lanager	1

Sample Description: BDC-05-14-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679893
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:11 by SR The Boeing Company
PO Box 3707
Submitted: 11/04/2016 10:00 MC 1W-12
Reported: 11/29/2016 12:49 Seattle WA 98124

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	EPA 200.8 rev 5.4		mg/l	mg/l	
06033	Copper	7440-50-8	0.0020 U	0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:17	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-14-161103 Total Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679894
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:11 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Metals		EPA 200.8 rev 5.4	mg/l	mg/l	
06025	Arsenic	7440-38-2	0.0073	0.00040	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:18	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-14-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679895
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:11 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved					
06033	Copper	EPA 200.8 rev 5.4 7440-50-8	mg/l 0.0020 U	mg/l 0.0020	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06033	Copper	EPA 200.8 rev 5.4	1	163107050028A	11/18/2016 17:20	Sarah L Burt	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163107050028	11/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BDC-05-14-161103 Dissolved Metals Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679896
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016 14:11 by SR

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
06025	Metals Dissolved Arsenic	EPA 200.8 rev 5.4 7440-38-2	mg/l 0.0074	mg/l 0.00040	1

Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06025	Arsenic	EPA 200.8 rev 5.4	1	163207050004A	11/17/2016 04:20	Choon Y Tian	1
07050	ICP/MS EPA-600 Digest	EPA 200.8 rev 5.4	1	163207050004	11/16/2016 06:11	James L Mertz	1

Sample Description: Trip Blank Water
Boeing_DC:SWMU-17 s-ann

LL Sample # WW 8679897
LL Group # 1729222
Account # 13419

Project Name: Boeing_DC:SWMU-17 s-ann

Collected: 11/03/2016

The Boeing Company
PO Box 3707
MC 1W-12
Seattle WA 98124

Submitted: 11/04/2016 10:00

Reported: 11/29/2016 12:49

TB-DC

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	
11996	cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2 U	0.2	1
11996	Trichloroethene	79-01-6	0.2 U	0.2	1
11996	Vinyl Chloride	75-01-4	0.2 U	0.2	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C VC, TCE, PCE, cis1,2-DCE	SW-846 8260C	1	H163132AA	11/08/2016 21:45	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163132AA	11/08/2016 21:45	Matthew S Krause	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 12:49

Group Number: 1729222

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ
	ug/l	ug/l
Batch number: H163132AA	Sample number(s): 8679819,8679825,8679831,8679837,8679843,8679849,8679855,8679861,8679867,8679873,8679879,8679885,8679891,8679897	
cis-1,2-Dichloroethene	0.2 U	0.2
Tetrachloroethene	0.2 U	0.2
Trichloroethene	0.2 U	0.2
Vinyl Chloride	0.2 U	0.2
Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 163120012A	Sample number(s): 8679826,8679838,8679844,8679850,8679856,8679868,8679874,8679880,8679886,8679892	
Acetylene	1.0 U	1.0
Ethane	1.0 U	1.0
Ethene	1.0 U	1.0
Methane	3.0 U	3.0
	mg/l	mg/l
Batch number: 163107050024A	Sample number(s): 8679821-8679824,8679827-8679830,8679833-8679834	
Arsenic	0.00040 U	0.00040
Copper	0.00021 U	0.00021
Batch number: 163107050025A	Sample number(s): 8679835-8679836,8679839-8679842,8679845-8679848	
Arsenic	0.00040 U	0.00040
Copper	0.00021 U	0.00021
Batch number: 163107050026A	Sample number(s): 8679851-8679854,8679857-8679860,8679869,8679875	
Arsenic	0.00040 U	0.00040
Copper	0.00034 U	0.00034
Batch number: 163107050027A	Sample number(s): 8679877-8679878,8679881-8679884,8679887-8679888	
Arsenic	0.00040 U	0.00040
Copper	0.00034 U	0.00034
Batch number: 163107050028A	Sample number(s): 8679871,8679889-8679890,8679893-8679895	
Arsenic	0.00040 U	0.00040
Copper	0.00034 U	0.00034
Batch number: 163207050004A	Sample number(s): 8679870,8679872,8679876,8679896	
Arsenic	0.00040 U	0.00040
Analysis Name	Result	LOQ
	mg/l	mg/l

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 12:49

Group Number: 1729222

Method Blank (continued)

Analysis Name	Result	LOQ
	mg/l	mg/l
Batch number: 16312667605B	Sample number(s): 8679819,8679825,8679831,8679837	
Total Organic Carbon	1.0 U	1.0
Batch number: 16312667606A	Sample number(s):	
	8679843,8679849,8679855,8679861,8679867,8679873,8679879,8679885,8679891	
Total Organic Carbon	1.0 U	1.0

Analysis Name	Result	MDL
	mg/l	mg/l
Batch number: 16320972601B	Sample number(s): 8679820,8679826,8679832,8679838,8679844,8679850,8679856,8679868	
Sulfate	0.30 U	0.30
Batch number: 16320972602A	Sample number(s): 8679862,8679874,8679880,8679886,8679892	
Sulfate	0.30 U	0.30

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: H163132AA	Sample number(s): 8679819,8679825,8679831,8679837,8679843,8679849,8679855,8679861,8679867,8679873,8679879,8679885,8679891,8679897								
cis-1,2-Dichloroethene	5.00	4.79			96		80-120		
Tetrachloroethene	5.00	4.52			90		80-120		
Trichloroethene	5.00	4.87			97		80-120		
Vinyl Chloride	5.00	3.71			74		62-128		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 163120012A	Sample number(s): 8679826,8679838,8679844,8679850,8679856,8679868,8679874,8679880,8679886,8679892								
Acetylene	51.2	52.34			102		61-148		
Ethane	59.2	60.47			102		85-115		
Ethene	60.8	62.26			102		83-115		
Methane	59.8	63.51			106		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 163107050024A	Sample number(s): 8679821-8679824,8679827-8679830,8679833-8679834								
Arsenic	0.0100	0.00997			100		85-115		
Copper	0.0500	0.0492			98		85-115		
Batch number: 163107050025A	Sample number(s): 8679835-8679836,8679839-8679842,8679845-8679848								
Arsenic	0.0100	0.00961			96		85-115		
Copper	0.0500	0.0488			98		85-115		
Batch number: 163107050026A	Sample number(s): 8679851-8679854,8679857-8679860,8679869,8679875								

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 12:49

Group Number: 1729222

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/l	LCS Conc mg/l	LCSD Spike Added mg/l	LCSD Conc mg/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Arsenic	0.0100	0.0108			108		85-115		
Copper	0.0500	0.0481			96		85-115		
Batch number: 163107050027A	Sample number(s): 8679877-8679878,8679881-8679884,8679887-8679888								
Arsenic	0.0100	0.0102			102		85-115		
Copper	0.0500	0.0499			100		85-115		
Batch number: 163107050028A	Sample number(s): 8679871,8679889-8679890,8679893-8679895								
Arsenic	0.0100	0.00971			97		85-115		
Copper	0.0500	0.0495			99		85-115		
Batch number: 163207050004A	Sample number(s): 8679870,8679872,8679876,8679896								
Arsenic	0.0100	0.0105			105		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16312667605B	Sample number(s): 8679819,8679825,8679831,8679837								
Total Organic Carbon	25	26.75			107		91-113		
Batch number: 16312667606A	Sample number(s): 8679843,8679849,8679855,8679861,8679867,8679873,8679879,8679885,8679891								
Total Organic Carbon	25	26.53			106		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16320972601B	Sample number(s): 8679820,8679826,8679832,8679838,8679844,8679850,8679856,8679868								
Sulfate	7.50	7.47			100		90-110		
Batch number: 16320972602A	Sample number(s): 8679862,8679874,8679880,8679886,8679892								
Sulfate	7.50	7.51			100		90-110		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: H163132AA	Sample number(s): 8679819,8679825,8679831,8679837,8679843,8679849,8679855,8679861,8679867,8679873,8679879,8679885,8679891,8679897 UNSPK: 8679867									
cis-1,2-Dichloroethene	0.130	5.00	5.41	5.00	5.61	106	110	80-120	4	30
Tetrachloroethene	0.2 U	5.00	5.37	5.00	5.56	107	111	80-120	3	30
Trichloroethene	0.2 U	5.00	5.51	5.00	5.75	110	115	80-120	4	30
Vinyl Chloride	0.628	5.00	5.01	5.00	5.23	88	92	62-128	4	30
	ug/l	ug/l	ug/l	ug/l	ug/l					

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 12:49

Group Number: 1729222

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 163120012A	Sample number(s): 8679826,8679838,8679844,8679850,8679856,8679868,8679874,8679880,8679886,8679892 UNSPK: P678783									
Acetylene	1.0 U	51.2	44.46	51.2	48.91	87	96	61-148	10	20
Ethane	121.71	59.2	168.34	59.2	183.47	79	104	74-131	9	30
Ethene	1.0 U	60.8	61.66	60.8	68.73	101	113	72-133	11	30
Methane	17384.59	59.8	16286.57	59.8	17443.8	-1835	99 (2)	73-125	7	30
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 163107050024A	Sample number(s): 8679821-8679824,8679827-8679830,8679833-8679834 UNSPK: 8679821, P679821									
Arsenic	0.0240	0.0100	0.0351			110		70-130		
Copper	0.00301	0.0500	0.0558			105		70-130		
Batch number: 163107050025A	Sample number(s): 8679835-8679836,8679839-8679842,8679845-8679848 UNSPK: 8679835, P679835									
Arsenic	0.0252	0.0100	0.0331			79		70-130		
Copper	0.00392	0.0500	0.0497			92		70-130		
Batch number: 163107050026A	Sample number(s): 8679851-8679854,8679857-8679860,8679869,8679875 UNSPK: 8679875, P679875									
Arsenic	0.0234	0.0100	0.0338			104		70-130		
Copper	0.00034 U	0.0500	0.0469			94		70-130		
Batch number: 163107050027A	Sample number(s): 8679877-8679878,8679881-8679884,8679887-8679888 UNSPK: 8679877, P679877									
Arsenic	0.0209	0.0100	0.0314			105		70-130		
Copper	0.00034 U	0.0500	0.0506			101		70-130		
Batch number: 163107050028A	Sample number(s): 8679871,8679889-8679890,8679893-8679895 UNSPK: 8679889, P679889									
Arsenic	0.00168	0.0100	0.0118			101		70-130		
Copper	0.00034 U	0.0500	0.0497			99		70-130		
Batch number: 163207050004A	Sample number(s): 8679870,8679872,8679876,8679896 UNSPK: 8679872									
Arsenic	0.0207	0.0100	0.0313			106		70-130		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16312667605B	Sample number(s): 8679819,8679825,8679831,8679837 UNSPK: P678013									
Total Organic Carbon	1.05	10	12.47			114*		91-113		
Batch number: 16312667606A	Sample number(s): 8679843,8679849,8679855,8679861,8679867,8679873,8679879,8679885,8679891 UNSPK: 8679867									
Total Organic Carbon	13	10	24.1			111		91-113		
	mg/l	mg/l	mg/l	mg/l	mg/l					

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 12:49

Group Number: 1729222

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/l	MS Spike Added mg/l	MS Conc mg/l	MSD Spike Added mg/l	MSD Conc mg/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16320972601B	Sample number(s): 8679820,8679826,8679832,8679838,8679844,8679850,8679856,8679868									
Sulfate	0.30 U	10	10.28			103		90-110		
UNSPK: 8679868										
Batch number: 16320972602A	Sample number(s): 8679862,8679874,8679880,8679886,8679892 UNSPK: 8679862									
Sulfate	0.30 U	10	10.53			105		90-110		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 163107050024A	Sample number(s): 8679821-8679824,8679827-8679830,8679833-8679834 BKG: 8679821, P679821			
Arsenic	0.0240	0.0250	4	20
Copper	0.00301	0.00289	4 (1)	20
Batch number: 163107050025A	Sample number(s): 8679835-8679836,8679839-8679842,8679845-8679848 BKG: 8679835, P679835			
Arsenic	0.0252	0.0251	0	20
Copper	0.00392	0.00404	3 (1)	20
Batch number: 163107050026A	Sample number(s): 8679851-8679854,8679857-8679860,8679869,8679875 BKG: 8679875, P679875			
Arsenic	0.0234	0.0250	7	20
Copper	0.00034 U	0.00034 U	0 (1)	20
Batch number: 163107050027A	Sample number(s): 8679877-8679878,8679881-8679884,8679887-8679888 BKG: 8679877, P679877			
Arsenic	0.0209	0.0212	1	20
Copper	0.00034 U	0.000393	200* (1)	20
Batch number: 163107050028A	Sample number(s): 8679871,8679889-8679890,8679893-8679895 BKG: 8679889, P679889			
Arsenic	0.00168	0.00190	12 (1)	20
Copper	0.00034 U	0.00034 U	0 (1)	20
Batch number: 163207050004A	Sample number(s): 8679870,8679872,8679876,8679896 BKG: 8679872			
Arsenic	0.0207	0.0204	2	20
Batch number: 16312667605B	Sample number(s): 8679819,8679825,8679831,8679837 BKG: P678013			
Total Organic Carbon	1.05	0.882	17* (1)	3

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 12:49

Group Number: 1729222

Laboratory Duplicate (continued)

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 16312667606A	Sample number(s): 8679843,8679849,8679855,8679861,8679867,8679873,8679879,8679885,8679891 BKG: 8679867			
Total Organic Carbon	13	13.36	3	3
	mg/l	mg/l		
Batch number: 16320972601B	Sample number(s): 8679820,8679826,8679832,8679838,8679844,8679850,8679856,8679868 BKG: 8679868			
Sulfate	0.30 U	0.30 U	0 (1)	15
Batch number: 16320972602A	Sample number(s): 8679862,8679874,8679880,8679886,8679892 BKG: 8679862			
Sulfate	0.30 U	0.30 U	0 (1)	15

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C VC, TCE, PCE, cis1,2-DCE
Batch number: H163132AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8679819	101	107	97	97
8679825	98	106	100	96
8679831	101	107	96	96
8679837	99	103	98	95
8679843	101	103	98	96
8679849	99	106	98	97
8679855	100	106	98	95
8679861	102	107	96	96
8679867	100	107	98	97
8679873	100	105	99	97
8679879	102	104	96	97
8679885	102	104	98	96
8679891	101	106	97	98
8679897	99	104	98	96
Blank	102	109	96	97
LCS	101	106	96	100
MS	99	107	99	102
MSD	98	106	98	102
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 163120012A

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 12:49

Group Number: 1729222

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: AMEE by RSK-175
Batch number: 163120012A

	Propene
8679826	84
8679838	80
8679838DL	95
8679844	84
8679844DL	96
8679850	87
8679850DL	90
8679856	83
8679856DL	91
8679868	78
8679868DL	95
8679874	88
8679874DL	97
8679880	73
8679880DL	93
8679886	88
8679886DL	94
8679892	76
8679892DL	93
Blank	108
LCS	108
MS	78
MSD	87

Limits: 44-123

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Boeing Chain of Custody



Lancaster Laboratories

Acct. # 13419 Group # 179222 Sample # 279810-97
 For Lancaster Laboratories use only
 Please print. Instructions on reverse side correspond.

1 Client Information		2 Sample Identification		3 Collected		4 Analyses Requested		5 Remarks/Comments	
Site Location: <u>Tukwila WA</u> Site Project: <u>Boeing Developmental Center</u> Site Program#: <u>SIUMV-17/025217.099.039</u> Boeing PM: <u>Lindsey Mahrt</u> Consultant Contact: <u>Chris Kimmel</u> Report To: <u>Lindsey Mahrt, Chris Kimmel</u> Invoice To: <input checked="" type="checkbox"/> Boeing EHS <input type="checkbox"/> Other (specify): Sampler: <u>Stephanie Renard, Javani Huet-Avila</u> # of Coolers: <u>2</u>		Matrix: <u>AG</u> No. of Containers: <u>9</u>		Date	Time	AMFE (RISKOP-175MOD)	TRC(SMS310)	Sulfate (300.0)	Total and Dissolved As+Cu (200.8)
BDC-05-23-161103	11/3/16	906	AG	X	X	X	X	X	X
BDC-05-03-161103	11/3/16	922	AG	X	X	X	X	X	X
BDC-05-22-161103	11/3/16	946	AG	X	X	X	X	X	X
BDC-05-20-161103	11/3/16	1021	AG	X	X	X	X	X	X
BDC-05-12-161103	11/3/16	1022	AG	X	X	X	X	X	X
BDC-05-19-161103	11/3/16	1102	AG	X	X	X	X	X	X
BDC-05-17-161103	11/3/16	1126	AG	X	X	X	X	X	X
BDC-05-08-161103	11/3/16	1212	AG	X	X	X	X	X	X
BDC-05-16-161103	11/3/16	1216	AG	X	X	X	X	X	X
BDC-05-13-161103	11/3/16	1252	AG	X	X	X	X	X	X
BDC-05-15-161103	11/3/16	1321	AG	X	X	X	X	X	X
BDC-05-24-161103	11/3/16	1402	AG	X	X	X	X	X	X
BDC-05-14-161103	11/3/16	1411	AG	X	X	X	X	X	X
TRIP BLANKS			AG	X	X	X	X	X	X

6 Turnaround Time Requested (please circle)
 Standard 72 hour
 5 day
 48 hour
 4 day
 24 hour

Date needed: _____
 Relinquished by: SAH Date/Time: 11/3/16 1530
 Relinquished by: _____ Date/Time: _____
 Relinquished by: _____ Date/Time: _____
 Relinquished by commercial carrier (circle):
 UPS FedEx Other: _____
 Received by: _____ Date/Time: _____
 Received by: _____ Date/Time: _____
 Received by: SAH Date/Time: 11/4/16 1000
 Temperature upon Receipt: 2-5-2-6C
 Custody Seals Intact? Yes No

Client: Boeing

Delivery and Receipt Information

Delivery Method: UPS Arrival Timestamp: 11/04/2016 10:00
 Number of Packages: 2 Number of Projects: 1

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	4
Paperwork Enclosed:	Yes	Trip Blank Type:	HCl
Samples Intact:	No	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Ayesha Ahmad (10877) at 11:29 on 11/04/2016

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	8013596-IR	2.6	IR	Wet	Y	Loose/Bag	N
2	8013596-IR	2.5	IR	Wet	Y	Loose/Bag	N

Samples Not Intact Details

Sample ID on Label	Bottle Code	Bottle Quantity	Container Salvageable?	Comments
BDC-05-16-161103	40 ml glass vial (GC/MS) - HCl	5	N	
BDC-05-16-161103	40 ml amber vial - H3PO4	4	N	

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Cumulative Groundwater Elevations

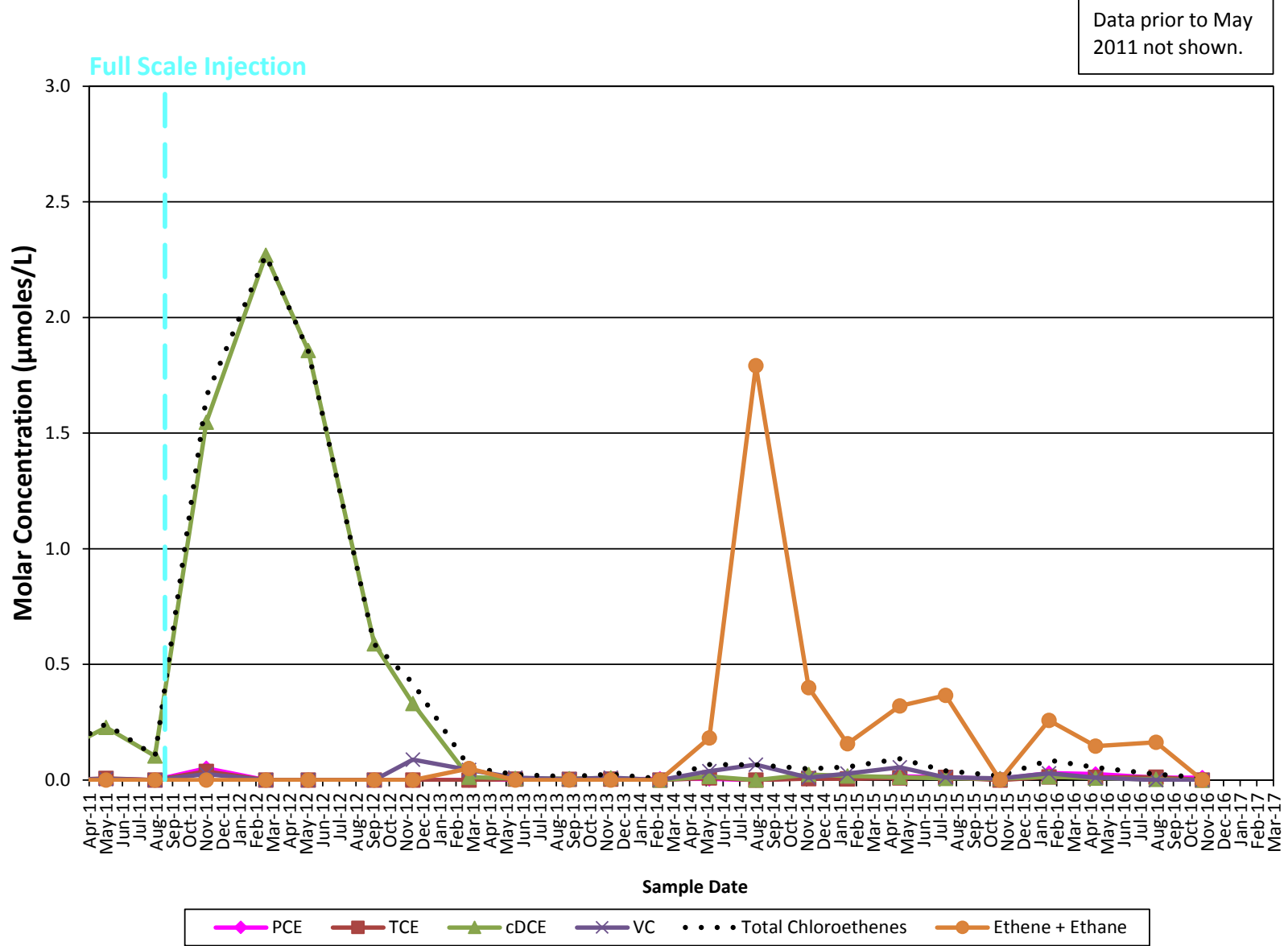
DEVELOPMENTAL CENTER
CUMULATIVE WATER LEVEL MEASUREMENTS

Well Location / Bldg.	Well ID No.	Well Depth (ft)	November 2016		August 2016		April 2016		January 2016		October 2015		July 2015		April 2015		January 2015		November 2014		August 2014		May 2014		February 2014		November 2013		
			Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	
9-101-bldg.	MW-6A	24.25	12.13	2.67			12.38	2.42			12.80	2.00			12.65	2.15			12.22	2.58			12.10	2.70			12.82	1.98	
9-101-bldg.	MW-6B	27.20	12.82	2.27			12.77	2.32			13.16	1.93			13.02	2.07			12.58	2.51			14.44	0.65			13.16	1.93	
9-101-bldg.	MW-6C	40.55																											
9-101-bldg.	MW-8C	40.20																											
9-101-bldg.	MW-9A	21.30	12.18	2.56			12.37	2.37			12.83	1.91			12.64	2.10			12.18	2.56			12.07	2.67			12.88	1.86	
9-101-bldg.	MW-9B	26.90																											
9-101-bldg.	MW-9C	38.80																											
9-101-bldg.	MW-9D	56.00																											
9-101-bldg.	MW-10A	20.20																		12.14	2.55			11.98	2.71			12.81	1.88
9-101-bldg.	MW-10C	40.40	12.16	2.48			12.37	2.27			12.66	1.96			12.57	2.05			12.06	2.56			11.91	2.71			12.73	1.89	
9-101-bldg.	MW-11A	19.90	12.14	2.74			12.47	2.41			12.87	2.01			12.74	2.14			12.31	2.57			12.10	2.78			12.89	1.99	
9-101-bldg.	MW-12A	20.20																	12.38	2.45			12.17	2.66			12.98	1.85	
9-101-bldg.	MW-13A	19.37	11.55	2.59			11.82	2.32			12.23	1.91			12.19	1.95			11.71	2.43			11.62	2.52			12.37	1.77	
9-101-bldg.	MW-13C	35.62	11.41	2.61			11.71	2.31			12.08	1.94			12.07	1.95			11.59	2.43			11.49	2.53			12.23	1.79	
9-101-bldg.	MW-14A	19.00																	11.93	2.44			11.85	2.52			12.59	1.78	
9-101-bldg.	MW-14C	33.30	11.33	2.64			11.78	2.19			11.95	2.02			11.95	2.02			11.54	2.43			11.49	2.48			12.17	1.80	
9-101-bldg.	MW-14E	82.10																											
9-101-bldg.	MW-15A	20.70																	11.77	2.40			11.72	2.45			12.44	1.73	
9-101-bldg.	MW-15C	34.35	11.98	2.57			12.45	2.10			12.19	1.98			12.29	1.88			11.70	2.47			11.71	2.46			12.42	1.75	
9-101-bldg.	MW-15D	51.80																											
9-101-bldg.	MW-16A	20.55	12.32	2.67			12.60	2.39			12.96	2.03			12.85	2.14			12.40	2.59			12.22	2.77			13.06	1.93	
9-101-bldg.	MW-16C	38.30	12.54	2.50			12.70	2.34			13.14	1.90			13.02	2.02			12.58	2.46			12.32	2.72			13.24	1.80	
9-101-bldg.	MW-17A	19.00	12.11	2.55			12.28	2.38			12.83	1.97			12.67	2.13			12.25	2.55			12.11	2.69			12.90	1.90	
9-101-bldg.	MW-17C	35.00																											
9-101-bldg.	MW-17D	52.50																											
9-101-bldg.	MW-18A	20.02	11.68	2.62			11.87	2.43			12.36	1.94			12.26	2.04			11.86	2.44			11.70	2.60			12.23	2.07	
9-101-bldg.	MW-18C	34.55																											
9-101-bldg.	MW-18D	52.85																											
9-101-bldg.	MW-19A	16.86																											
9-101-bldg.	MW-19C	33.92																											
9-101-bldg.	MW-19D	51.86																											
9-101-bldg.	MW-20A	19.34																											
9-101-bldg.	MW-20C	35.32	11.55	2.60			11.95	2.20			12.14	2.01			12.19	1.96			11.61	2.54			11.58	2.57			12.40	1.75	
9-101-bldg.	MW-20D	50.15																											
9-101-bldg.	MW-22A	19.20	11.79	2.46			12.12	2.13			12.34	1.91			12.33	1.92			11.96	2.29			11.90	2.35			12.42	1.83	
9-101-bldg.	MW-23A	19.50																											
9-101/9-50 bldg.	MW-21A	19.90	11.85	2.60			12.10	2.35			12.55	1.90			12.48	1.97			12.06	2.39			11.90	2.55			12.39	2.06	
9-101/9-50 bldg.	MW-21C	34.00																											
9-64-bldg.	BDC-05-02	25.35	11.68	2.73	12.53	1.88	11.77	2.64	10.85	3.56	12.28	2.13	12.30	2.11	12.07	2.34	11.49	2.92	11.77	2.64	12.26	2.15	11.69	2.72	12.21	2.20	12.36	2.05	
9-64-bldg.	BDC-05-03	25.47	11.71	2.70			11.86	2.55			12.33	2.08			12.19	2.22			11.79	2.62			11.76	2.65			12.43	1.98	
9-64-bldg.	BDC-05-04	25.36	11.86	2.73			11.95	2.64			12.54	2.05			12.26	2.33			11.95	2.64			11.93	2.66			12.51	2.08	
9-64-bldg.	BDC-05-05	24.18	11.52	2.92			11.57	2.87			12.18	2.26			11.86	2.58			11.53	2.91			11.47	2.97			12.15	2.29	
9-64-bldg.	BDC-05-07	25.30	11.22	2.77			11.38	2.61			11.88	2.11			11.67	2.32			11.37	2.62			11.29	2.70			11.96	2.03	
9-64-bldg.	BDC-05-08	26.75	11.95	2.72			12.11	2.56			12.62	2.05			12.47	2.20			12.10	2.57			12.07	2.60			12.72	1.95	
9-64-bldg.	BDC-05-09	24.55	11.68	2.73			11.80	2.61			12.30	2.11			12.10	2.31			11.79	2.62			11.71	2.70			12.37	2.04	
9-64-bldg.	BDC-05-10	24.57	11.62	2.79			11.80	2.61			12.27	2.14			12.11	2.30			11.72	2.69			11.70	2.71			12.36	2.05	
9-64-bldg.	BDC-05-11	24.85	11.78	2.87			12.02	2.63			12.99	1.66			12.33	2.32			11.93	2.72			11.91	2.74			12.59	2.06	
9-64-bldg.	BDC-05-12	24.87	11.91	2.81	12.80	1.92	12.11	2.61	11.21	3.51	12.59	2.13	12.63	2.09	12.43	2.29	11.83	2.89	12.06	2.66	12.58	2.14	12.01	2.71	12.53	2.19	12.88	1.84	
9-64-bldg.	BDC-05-13	24.78	11.68	2.75			11.87	2.56			12.37	2.06			12.20	2.23			11.85	2.58			11.86	2.57			12.44	1.99	
9-64-bldg.	BDC-05-14	24.85	11.52	2.70			11.71	2.51			12.18	2.04			12.03	2.19			11.70	2.52			11.68	2.54			12.25	1.97	
9-64-bldg.	BDC-05-15	24.48	11.28	2.69			11.49	2.48			11.95	2.02			11.83	2.14			11.47	2.50			11.42	2.55			12.04	1.93	
9-64-bldg.	BDC-05-16	24.89	11.43	2.64	12.31	1.76	11.65	2.42	10.79	3.28	12.10	1.97	12.10	1.97	11.90	2.17	11.31	2.76	11.65	2.42	12.04	2.03	11.60	2.47	12.00	2.07	12.16	1.91	
9-64-bldg.	BDC-05-17	24.82	11.65	2.60			11.86	2.39			12.29	1.96			12.12	2.13			11.86	2.39			11.83	2.42			12.34	1.91	
9-64-bldg.	BDC-05-18	24.69	11.13	2.66	11.96	1.83	11.22	2.57	10.34	3.45	11.77	2.02	11.75	2.04	11.50	2.29	10.98	2.81	11.14	2.65	11.51	2.28	11.16	2.63	11.62	2.17	11.71	2.08	
9-64-bldg.	BDC-05-19	24.85	11.82	2.74	12.68	1.88	11.99	2.57	11.11	3.45	12.49	2.07	12.53	2.03	12.33	2.23	11.61	2.95	11.96	2.60	12.47	2.09	11.91	2.65	12.43	2.13	12.58	1.98	
9-64-bldg.	BDC-05-20	24.80	11.74	2.60	12.62	1.72	11.92	2.42	11.08	3.26	12.37	1.97	12.42	1.92	12.25	2.09	11.64	2.70	11.92	2.42	12.45	1.89	11.95	2.39	12.28	2.06	12.46	1.88	
9-64-bldg.	BDC-05-21	24.86	11.57	2.62	12.50	1.69	11.80	2.39	10.96	3.23	12.22	1.97	12.24	1.95	12.10	2.09	11.51	2.68	11.80	2.39	12.29	1.90	11.79	2.40	12.15	2.04	12.30	1.89	
9-64-bldg.	BDC-05-22	25.07	11.59	2.57	12.42	1.74	11.73	2.43	10.89	3.27	12.19	1.97	12.29	1.87	12.04	2.12	11.47	2.69	11.74	2.42	12.25	1.91	11.75	2.41	12.08	2.08	12.25	1.91	
9-64-bldg																													

DEVELOPMENTAL CENTER
CUMULATIVE WATER LEVEL MEASUREMENTS

Well Location / Bldg.	Well ID No.	Well Depth (ft)	August 2013		May 2013		February 2013		November 2012		May 2012		November 2011		July 2011		May 2011		November 2010		May 2010		November 2009	
			Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
9-101-bldg.	MW-6A	24.25			12.92	1.88			12.82	1.98	12.61	2.19	12.99	1.81			12.50	2.30	12.70	2.10	12.69	2.11	12.42	2.38
9-101-bldg.	MW-6B	27.20			13.27	1.82			13.17	1.92	12.96	2.13	13.29	1.80			12.81	2.28	13.06	2.03	13.04	2.05	12.73	2.36
9-101-bldg.	MW-6C	40.55																					12.72	2.35
9-101-bldg.	MW-8C	40.20																					12.70	2.22
9-101-bldg.	MW-9A	21.30			12.80	1.94			12.83	1.91	12.54	2.20	13.03	1.71			12.53	2.21	12.65	2.09	12.65	2.09	12.43	2.31
9-101-bldg.	MW-9B	26.90																					12.30	2.29
9-101-bldg.	MW-9C	38.80																					12.40	2.26
9-101-bldg.	MW-9D	56.00																					12.43	2.23
9-101-bldg.	MW-10A	20.20			12.72	1.97			12.77	1.92	12.55	2.14	12.97	1.72			12.47	2.22	12.64	2.05	12.62	2.07	12.46	2.23
9-101-bldg.	MW-10C	40.40			12.65	1.97			12.70	1.92	12.49	2.13	12.90	1.72			12.38	2.24	12.55	2.07	12.53	2.09	12.41	2.21
9-101-bldg.	MW-11A	19.90			12.84	2.04			12.19	2.69	12.65	2.23	13.03	1.85			12.62	2.26	12.59	2.29	12.69	2.19	12.52	2.36
9-101-bldg.	MW-12A	20.20			12.88	1.95			13.01	1.82	12.70	2.13	13.23	1.60			12.71	2.12	12.68	2.15	12.73	2.10	12.56	2.27
9-101-bldg.	MW-13A	19.37			12.36	1.78			12.27	1.87	12.20	1.94	12.66	1.48			12.11	2.03	12.08	2.06	12.14	2.00	11.89	2.25
9-101-bldg.	MW-13C	35.62			12.22	1.80			12.11	1.91	12.06	1.96	12.52	1.50			11.94	2.08	11.92	2.10	12.02	2.00	11.71	2.31
9-101-bldg.	MW-14A	19.00			12.65	1.72			12.53	1.84	12.46	1.91	12.71	1.66			12.16	2.21	12.22	2.15	12.39	1.98	12.10	2.27
9-101-bldg.	MW-14C	33.30			12.25	1.72			12.07	1.90	12.09	1.88	12.20	1.77			12.78	1.19	11.82	2.15	12.00	1.97	11.65	2.32
9-101-bldg.	MW-14E	82.10																					7.20	6.98
9-101-bldg.	MW-15A	20.70			12.48	1.69			12.34	1.83	12.16	2.01	12.51	1.66			11.87	2.30	12.12	2.05	12.22	1.95	11.89	2.28
9-101-bldg.	MW-15C	34.35			12.54	1.63			12.27	1.90	12.36	1.81	12.44	1.73			11.49	2.68	12.00	2.17	12.17	2.00	11.85	2.32
9-101-bldg.	MW-15D	51.80																					12.02	2.39
9-101-bldg.	MW-16A	20.55			13.07	1.92			13.02	1.97	12.81	2.18	13.19	1.80			12.67	2.32	12.84	2.15	12.88	2.11	12.68	2.31
9-101-bldg.	MW-16C	38.30			13.25	1.79			13.17	1.87	13.01	2.03	13.33	1.71			12.84	2.20	13.02	2.02	13.04	2.00	12.63	2.41
9-101-bldg.	MW-17A	19.00			12.98	1.82			12.78	2.02	12.26	2.54	12.73	2.07	12.84	1.96	12.45	2.35	12.65	2.15	12.63	2.17	12.55	2.25
9-101-bldg.	MW-17C	35.00																						
9-101-bldg.	MW-17D	52.50																						
9-101-bldg.	MW-18A	20.02			12.58	1.72			12.39	1.91	11.90	2.40	12.84	1.46	12.43	1.87	12.14	2.16	12.22	2.08	12.25	2.05	12.21	2.09
9-101-bldg.	MW-18C	34.55																					12.36	2.27
9-101-bldg.	MW-18D	52.85																						
9-101-bldg.	MW-19A	16.86			10.74	1.49																	10.11	2.12
9-101-bldg.	MW-19C	33.92																					9.98	2.25
9-101-bldg.	MW-19D	51.86																						
9-101-bldg.	MW-20A	19.34																					12.37	1.94
9-101-bldg.	MW-20C	35.32			12.50	1.65			12.22	1.93	12.18	1.97	12.76	1.39			12.27	1.88	11.87	2.28	12.06	2.09	11.70	2.45
9-101-bldg.	MW-20D	50.15																						
9-101-bldg.	MW-22A	19.20			12.72	1.53			12.42	1.83	12.35	1.90	12.52	1.73			12.14	2.11	12.40	1.85	12.30	1.95	12.04	2.21
9-101-bldg.	MW-23A	19.50																					11.86	2.41
9-101/9-50 bldg.	MW-21A	19.90			12.80	1.65			12.60	1.85	12.13	2.32	13.05	1.40	12.67	1.78	12.41	2.04	12.43	2.02	12.45	2.00	12.37	2.08
9-101/9-50 bldg.	MW-21C	34.00																						
9-64-bldg.	BDC-05-02	25.35	12.47	1.94	12.29	2.12	12.19	2.22	12.31	2.10	11.81	2.60	12.63	1.78	12.35	2.06	11.81	2.60	12.10	2.31	12.14	2.27	12.05	2.36
9-64-bldg.	BDC-05-03	25.47			12.36	2.05			12.36	2.05	11.95	2.46	12.77	1.64			11.94	2.47	12.21	2.20	12.24	2.17	12.11	2.30
9-64-bldg.	BDC-05-04	25.36			12.17	2.42			12.52	2.07	12.05	2.54	12.82	1.77			12.03	2.56	12.30	2.29	12.33	2.26	12.22	2.37
9-64-bldg.	BDC-05-05	24.18			12.13	2.31			13.40	1.04	11.65	2.79	12.50	1.94			11.61	2.83	11.95	2.49	11.97	2.47	11.89	2.55
9-64-bldg.	BDC-05-07	25.30			11.92	2.07			11.97	2.02	11.40	2.59	12.23	1.76			11.42	2.57	11.95	2.04	11.75	2.24	11.95	2.04
9-64-bldg.	BDC-05-08	26.75			12.64	2.03			12.64	2.03	12.28	2.39	13.02	1.65			12.20	2.47	12.49	2.18	12.51	2.16	12.39	2.28
9-64-bldg.	BDC-05-09	24.55			12.31	2.10			12.36	2.05	11.90	2.51	12.68	1.73	12.27	2.13								
9-64-bldg.	BDC-05-10	24.57			12.31	2.10			12.30	2.11	11.95	2.46	12.74	1.67	12.27	2.14								
9-64-bldg.	BDC-05-11	24.85			12.51	2.14			12.55	2.10	12.13	2.52	12.92	1.73	12.60	2.05								
9-64-bldg.	BDC-05-12	24.87	12.78	1.94	12.61	2.11	12.53	2.19	12.66	2.06	12.24	2.48	13.00	1.72	12.57	2.15								
9-64-bldg.	BDC-05-13	24.78			12.40	2.03			12.44	1.99	12.02	2.41	12.78	1.65	12.35	2.08								
9-64-bldg.	BDC-05-14	24.85			12.21	2.01			12.29	1.93	11.83	2.39	12.55	1.67	12.23	1.99								
9-64-bldg.	BDC-05-15	24.48			12.07	1.90			11.97	2.00	11.63	2.34	12.34	1.63	11.95	2.02								
9-64-bldg.	BDC-05-16	24.89	12.25	1.82	12.19	1.88	12.04	2.03	12.09	1.98	11.78	2.29	12.44	1.63	12.05	2.02								
9-64-bldg.	BDC-05-17	24.82			12.30	1.95			12.27	1.98	11.65	2.60	12.60	1.65	12.27	1.98								
9-64-bldg.	BDC-05-18	24.69	11.90	1.89	11.72	2.07	11.63	2.16	11.75	2.04	11.34	2.45	12.10	1.69	11.84	1.95								
9-64-bldg.	BDC-05-19	24.85	12.68	1.88	12.52	2.04	12.44	2.12	12.60	1.96	12.15	2.41	12.90	1.66	12.59	1.97								
9-64-bldg.	BDC-05-20	24.80	12.55	1.79	12.38	1.96	12.41	1.93	12.44	1.90	12.08	2.26	12.75	1.59	12.47	1.87								
9-64-bldg.	BDC-05-21	24.86	12.42	1.77	12.26	1.93	12.25	1.94	12.30	1.89	11.94	2.25	12.59	1.60	12.34	1.85								
9-64-bldg.	BDC-05-22	25.07	12.38	1.78	12.22	1.94	12.18	1.98	12.24	1.92	11.87	2.29	12.54	1.62	12.27	1.89								
9-64-bldg.	BDC-05-23	25.10	12.83	1.63	12.70	1.76	12.56	1.90	12.74	1.72	12.39	2.07	13.08	1.38	12.79	1.67								
9-64-bldg.	BDC-05-24	24.73	12.34	1.85	12.19	2.00	12.09	2.10	12.20	1.99	11.82	2.37	12.59	1.60	12.28	1.91								
9-60 bldg.	BDC-101	18.42	12.27	2.20	11.99	2.48	11.77	2.70	12.20	2.27	11.32	3.15	12.46	2.01	12.16	2.31	11.48	2.99	11.92	2.55	11.82	2.65	11.82	2.65
9-60 bldg.	BDC-102	18.83	12.04	2.23	11.79	2.48	11.55	2.72	11.93	2.34	11.13	3.14	12.16	2.11	11.92	2.35	11.20	3.07	11.67	2.60	11.57	2.70	11.58	2.69
9-60 bldg.	BDC-103	18.51	12.06	2.28	11.71	2.63	11.43	2.91	11.88	2.46</														

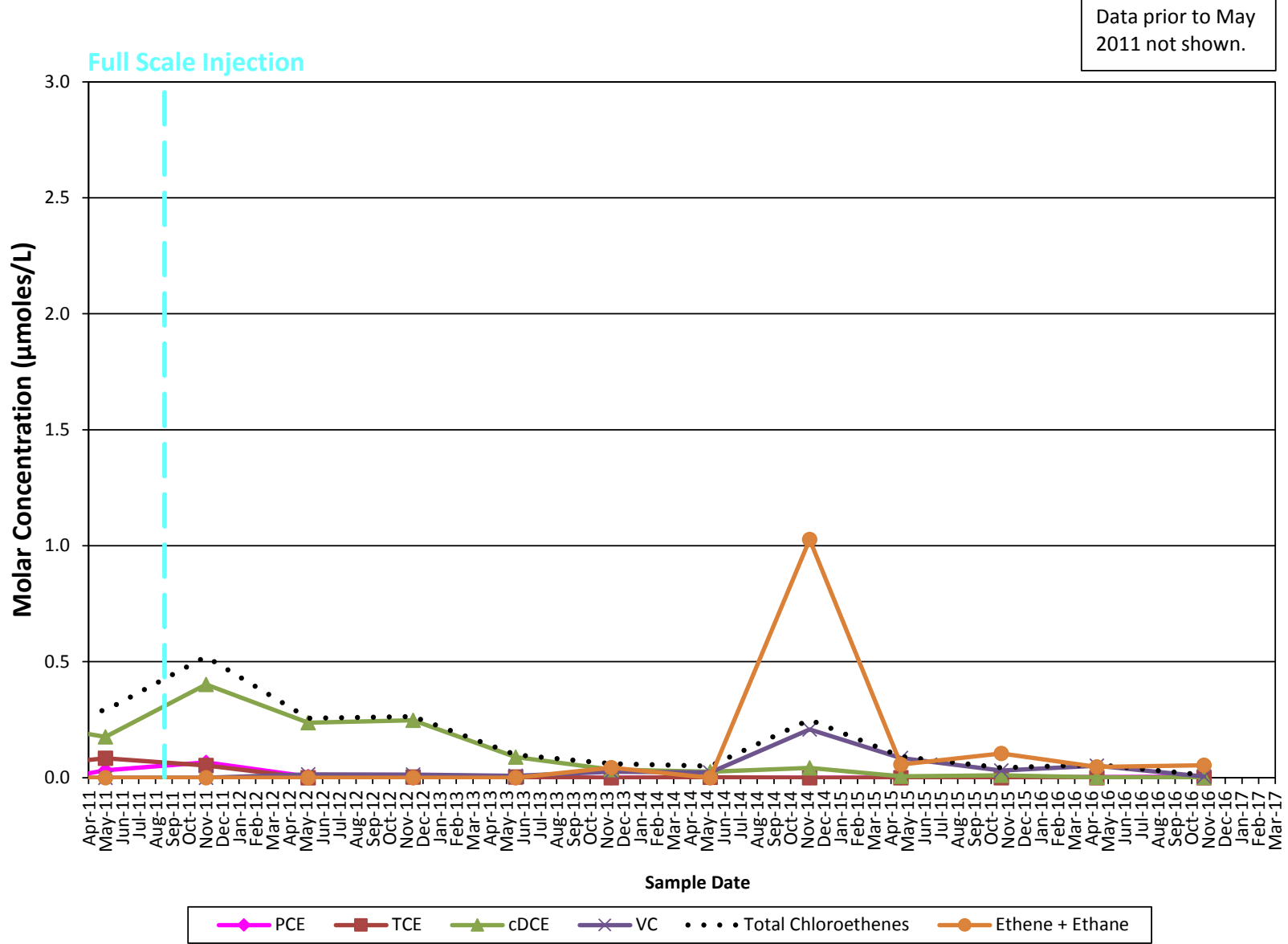
Time Plots – Molar Concentrations of VOCs and Breakdown Products



Boeing Developmental Center
Tukwila, Washington

Molar Equivalents
Source Zone Injection Well BDC-05-02
VOCs

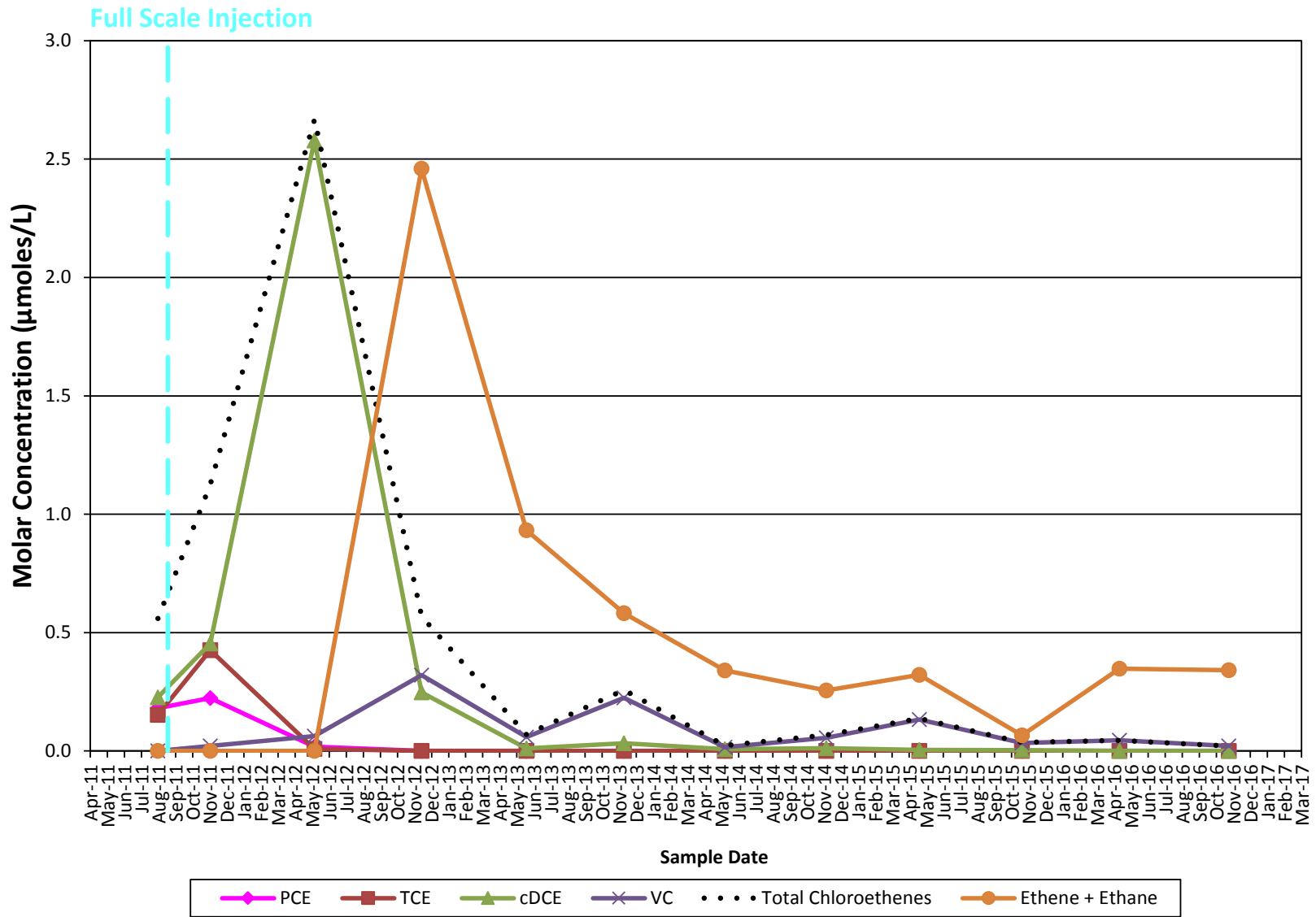
Figure
C-1



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Molar Equivalents
Source Zone Injection Well BDC-05-07
VOCs

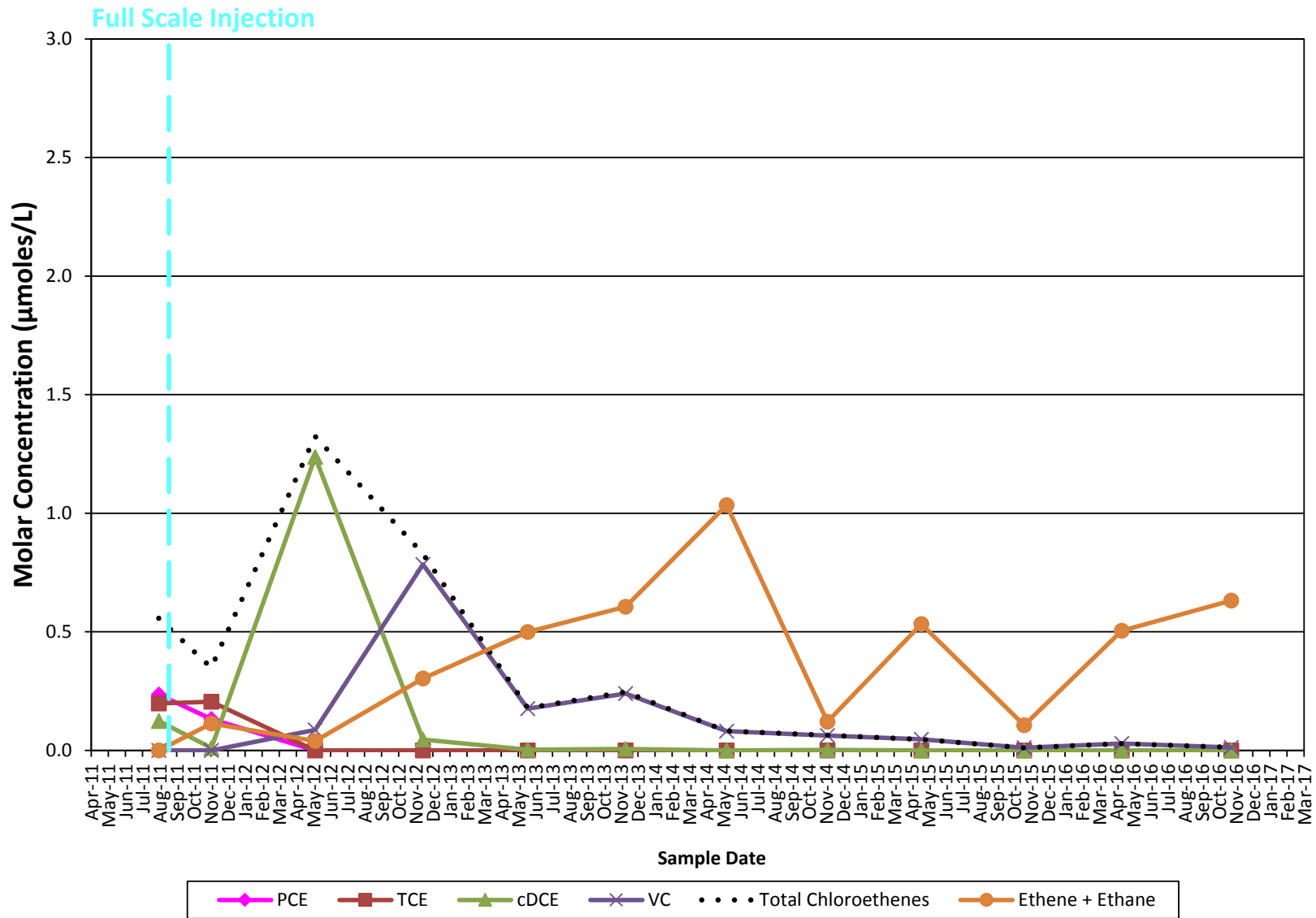
Figure
C-2



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**Molar Equivalents
Plume Injection Well BDC-05-09 VOCs**

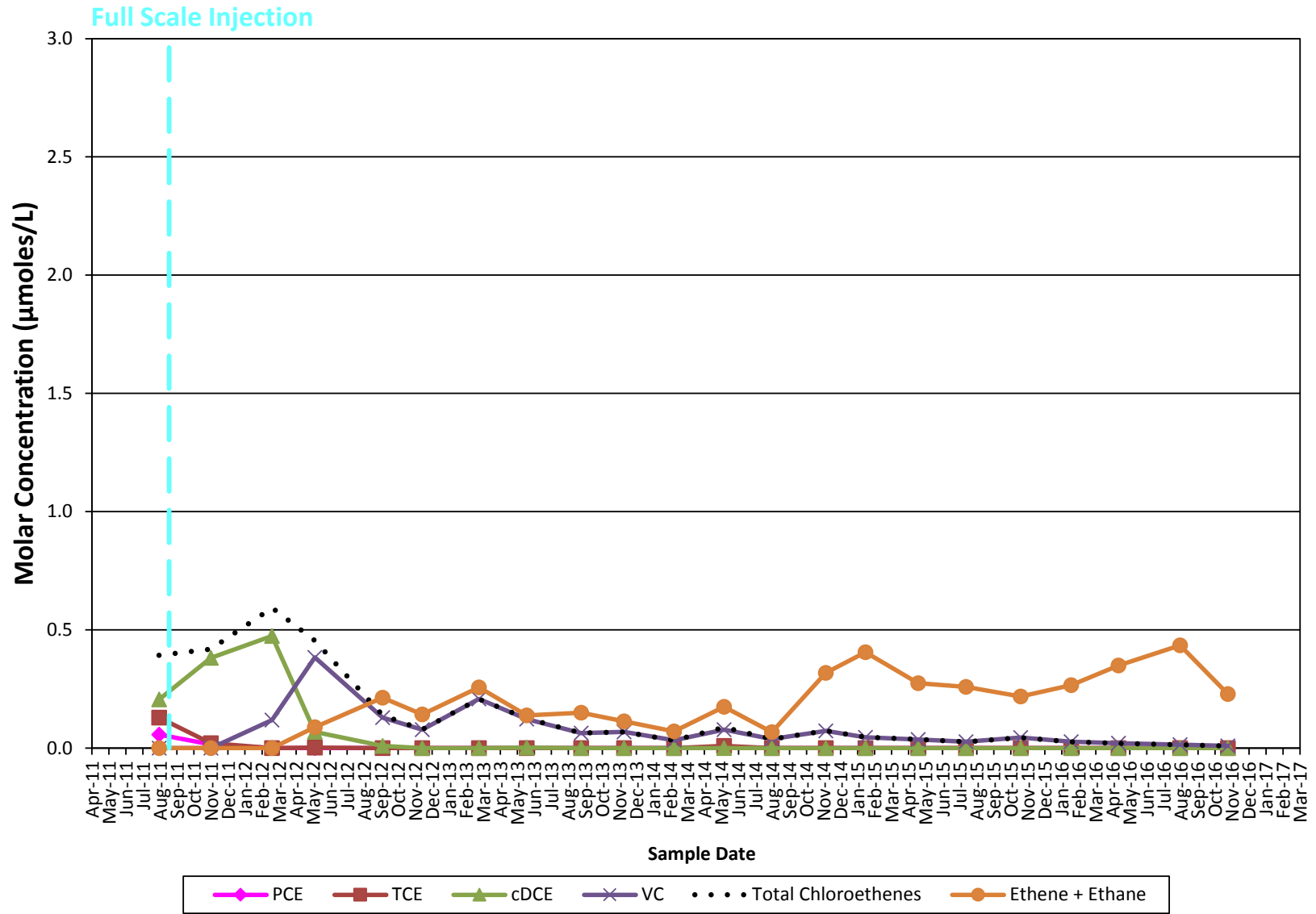
Figure
C-3



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**Molar Equivalents
Plume Injection Well BDC-05-10 VOCs**

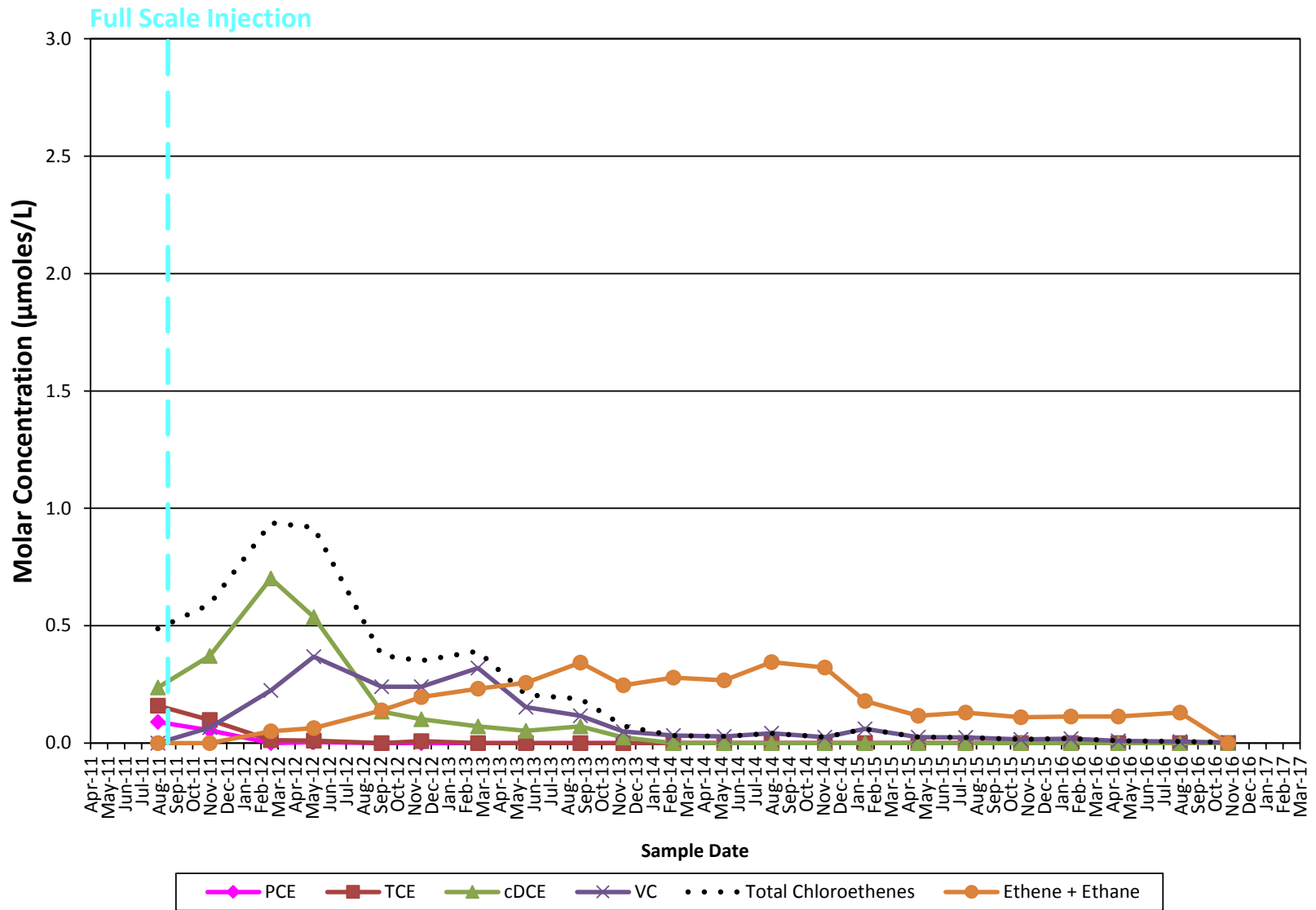
Figure
C-4



Boeing Developmental Center
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**Molar Equivalents
Plume Injection Well BDC-05-16 VOCs**

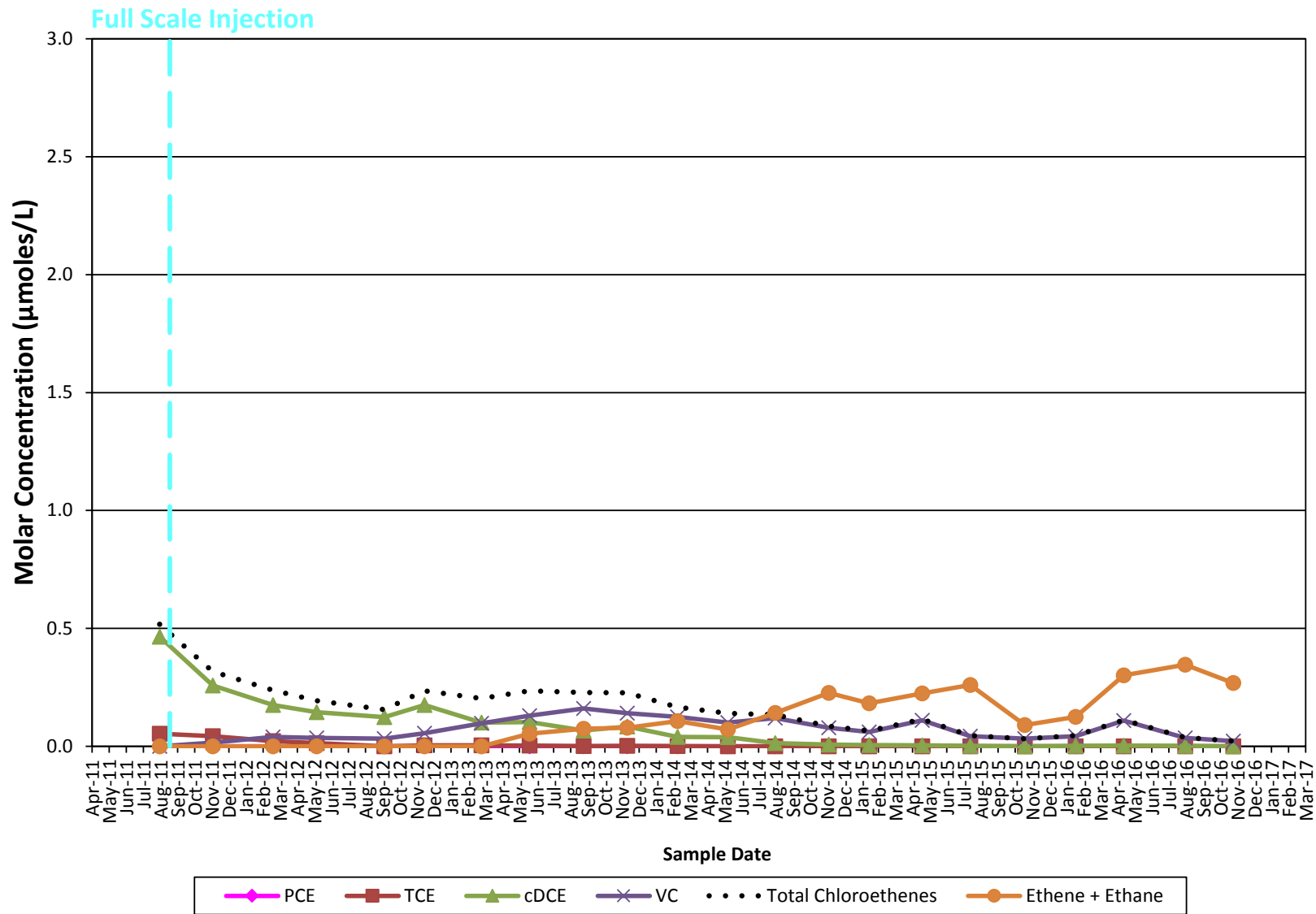
Figure
C-5



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**Molar Equivalents
Monitoring Well BDC-05-19 VOCs**

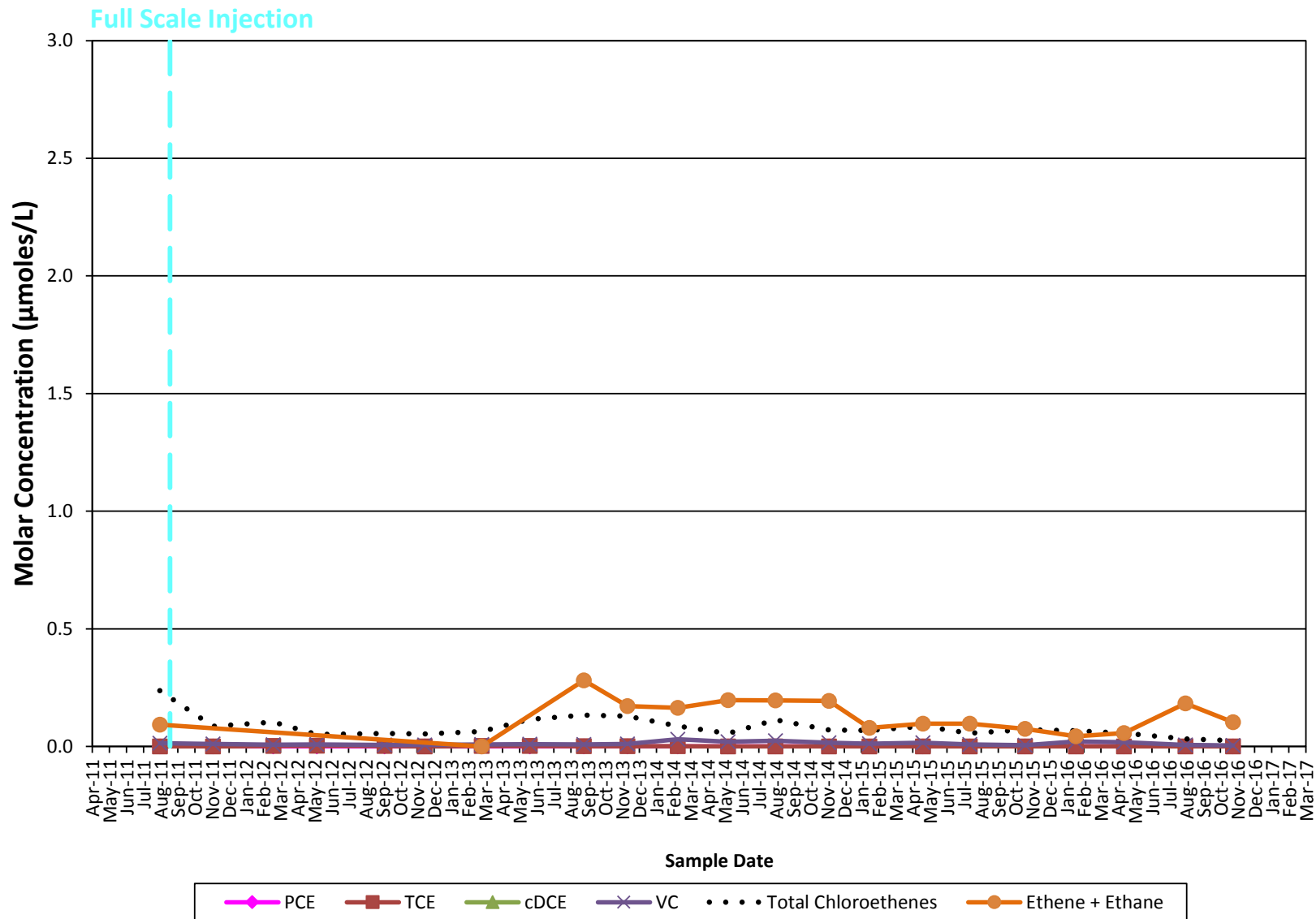
Figure
C-6



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**Molar Equivalents
Monitoring Well BDC-05-20 VOCs**

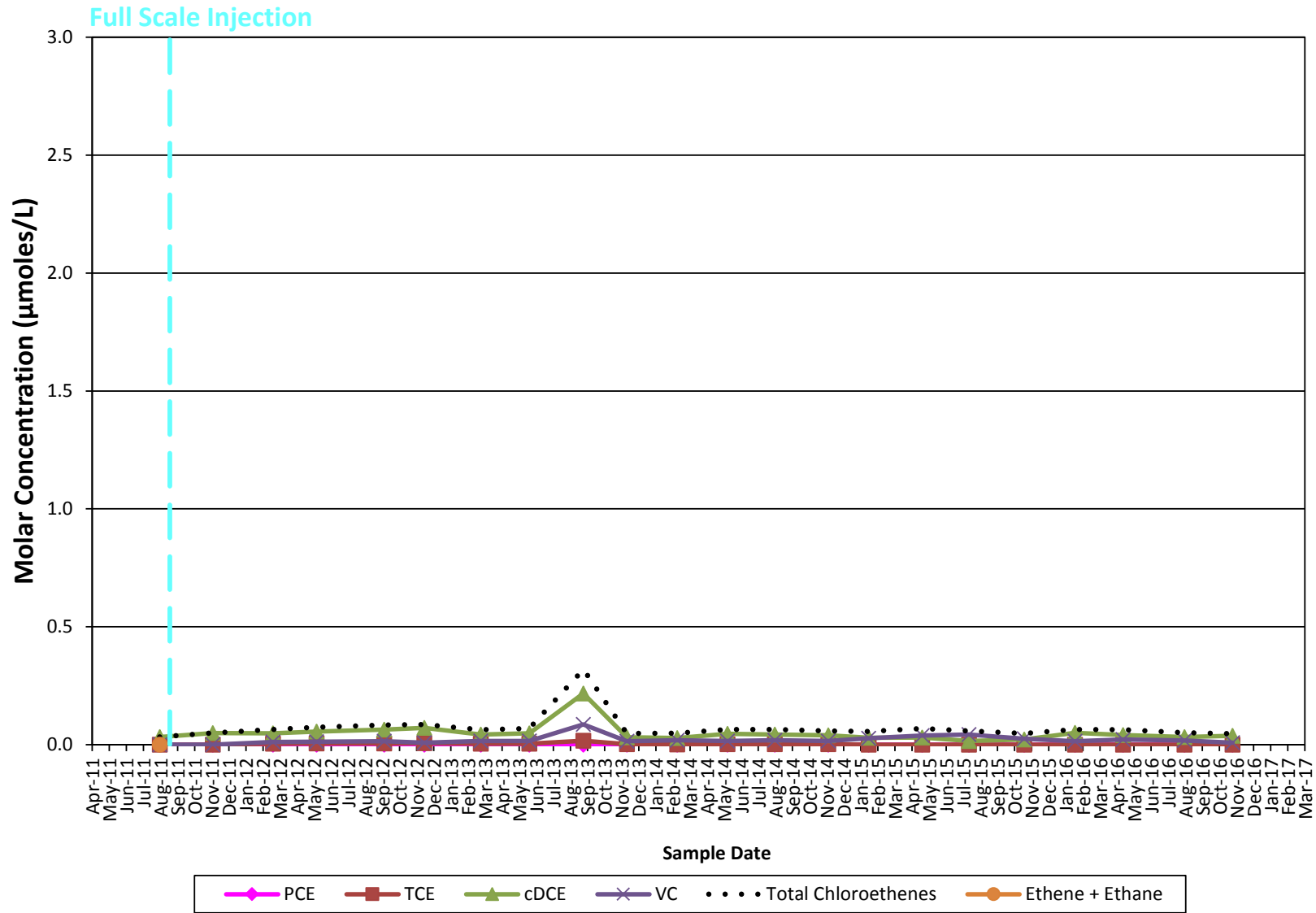
Figure
C-7



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**Molar Equivalents
Monitoring Well BDC-05-21 VOCs**

Figure
C-8

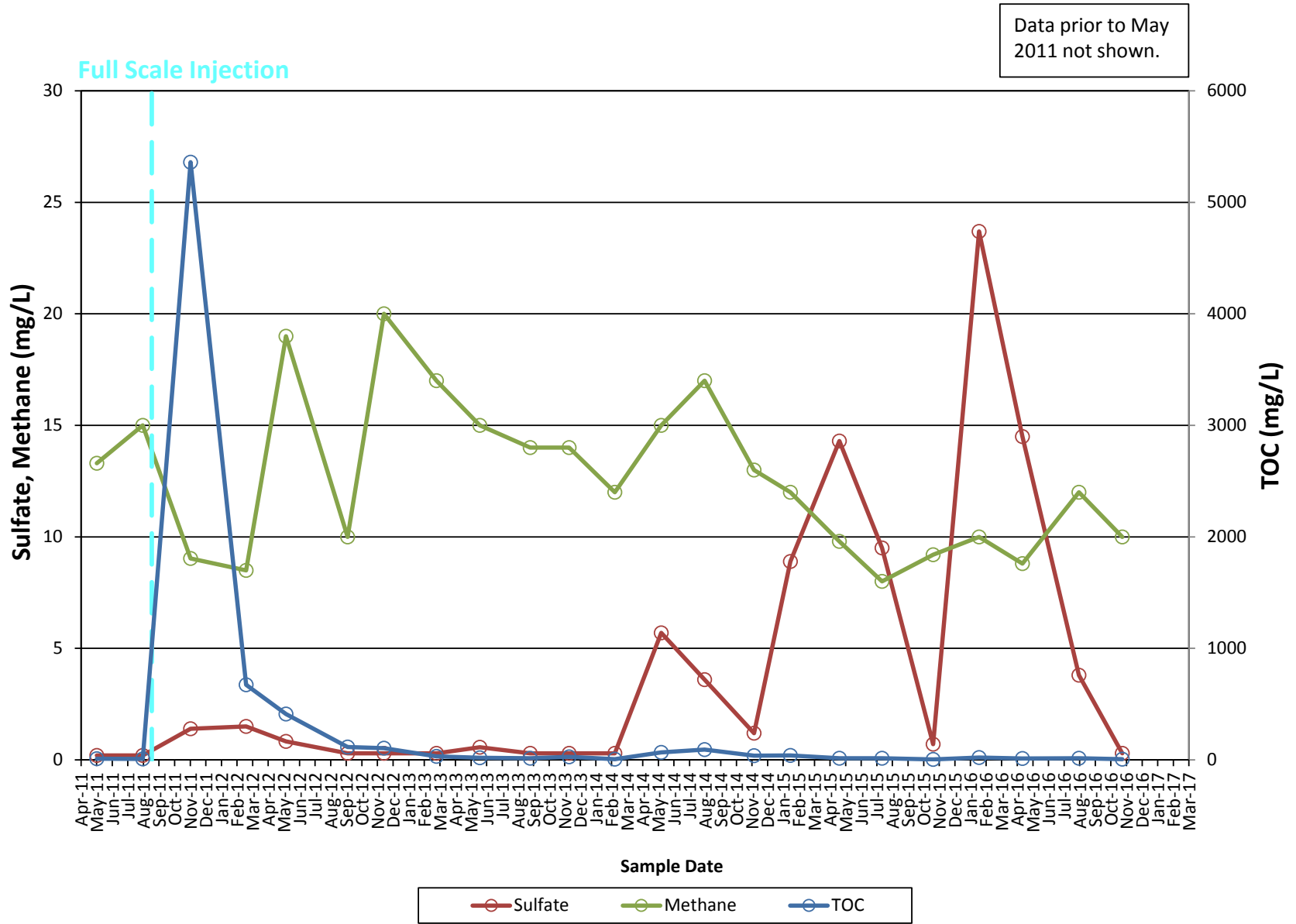


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**Molar Equivalents
Monitoring Well BDC-05-23 VOCs**

Figure
C-9

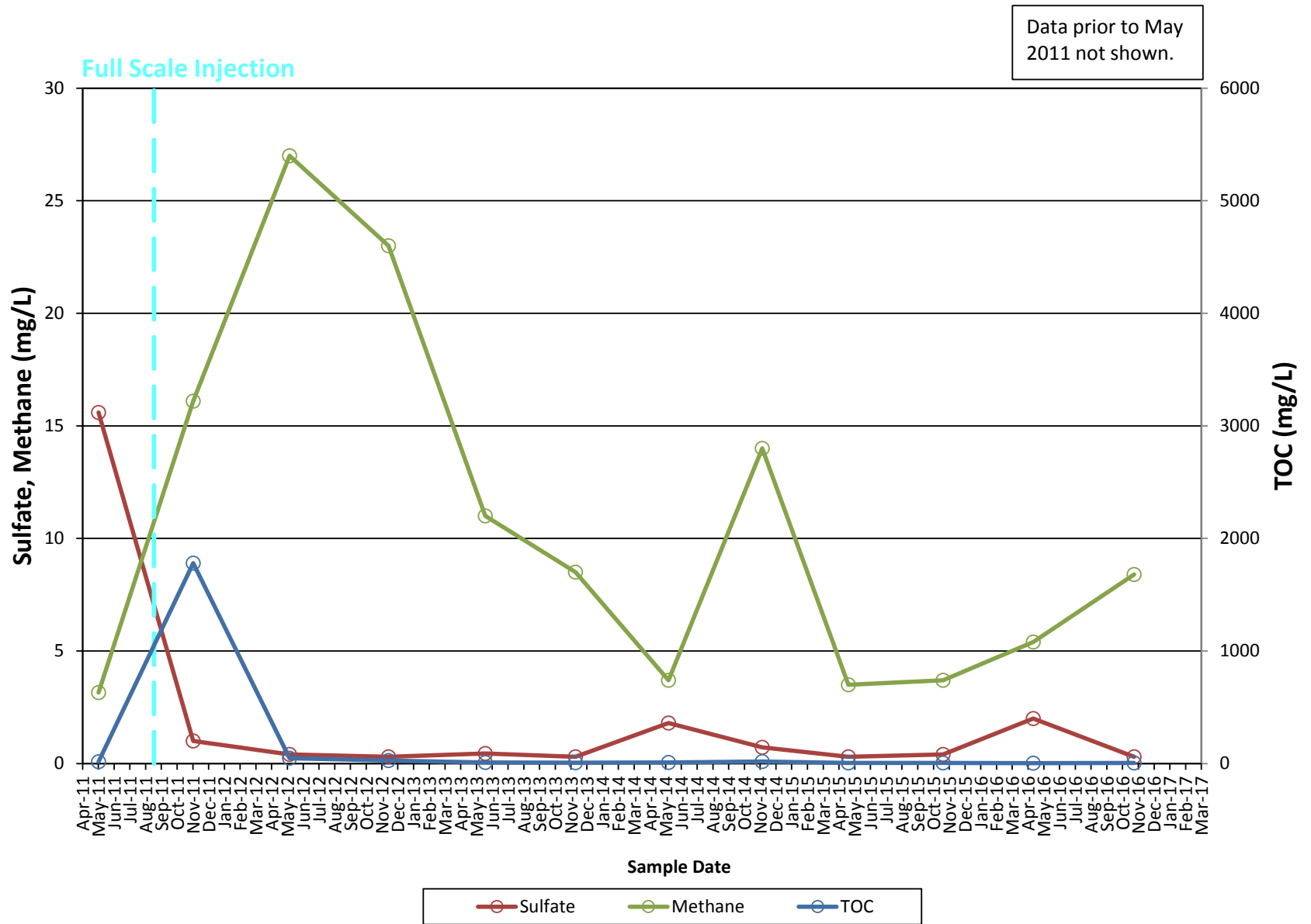
Time Plots – Aquifer Redox Parameters and TOC



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Redox and TOC
Source Zone Injection Well BDC-05-02

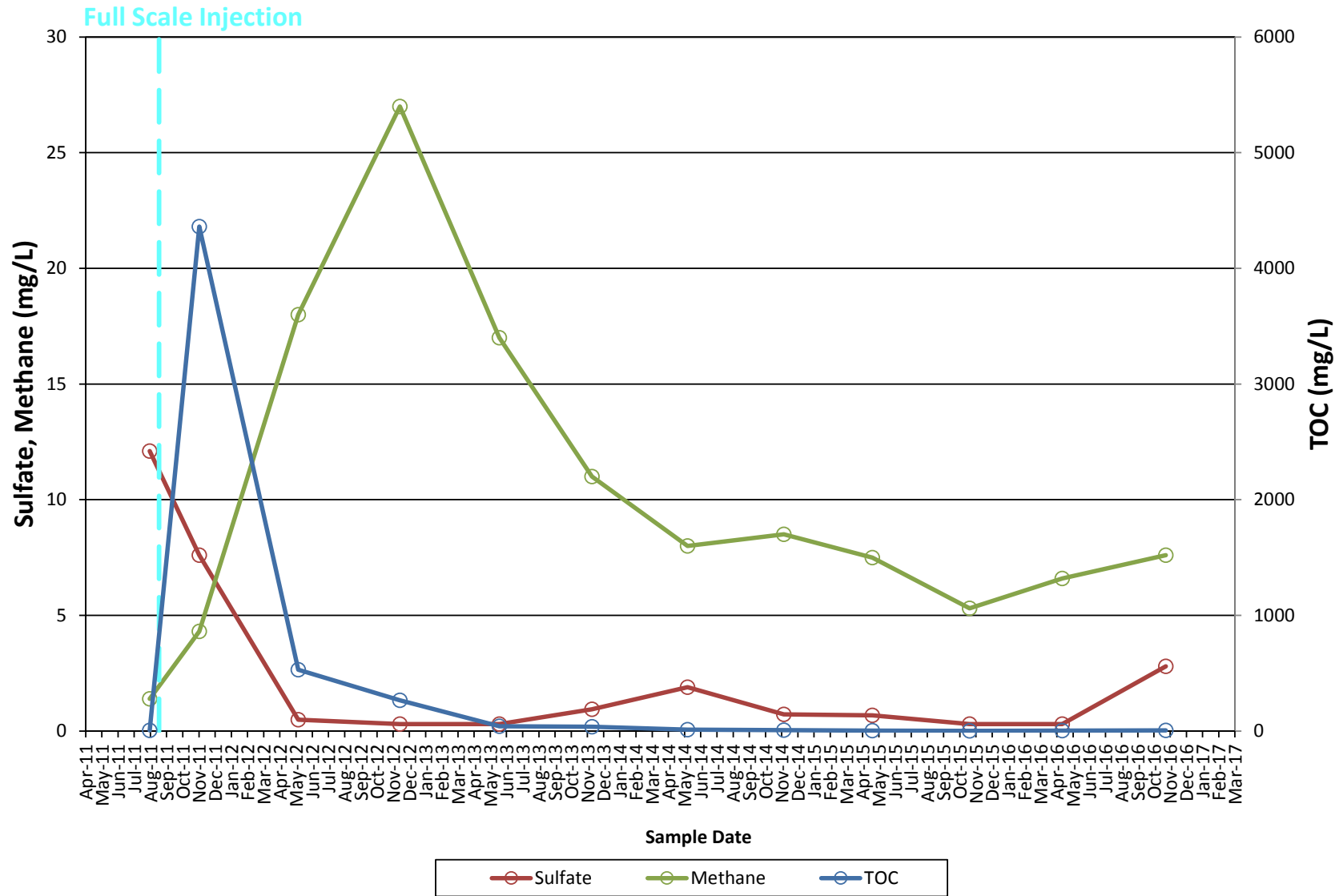
Figure
D-1



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Redox and TOC
Source Zone Injection Well BDC-05-07

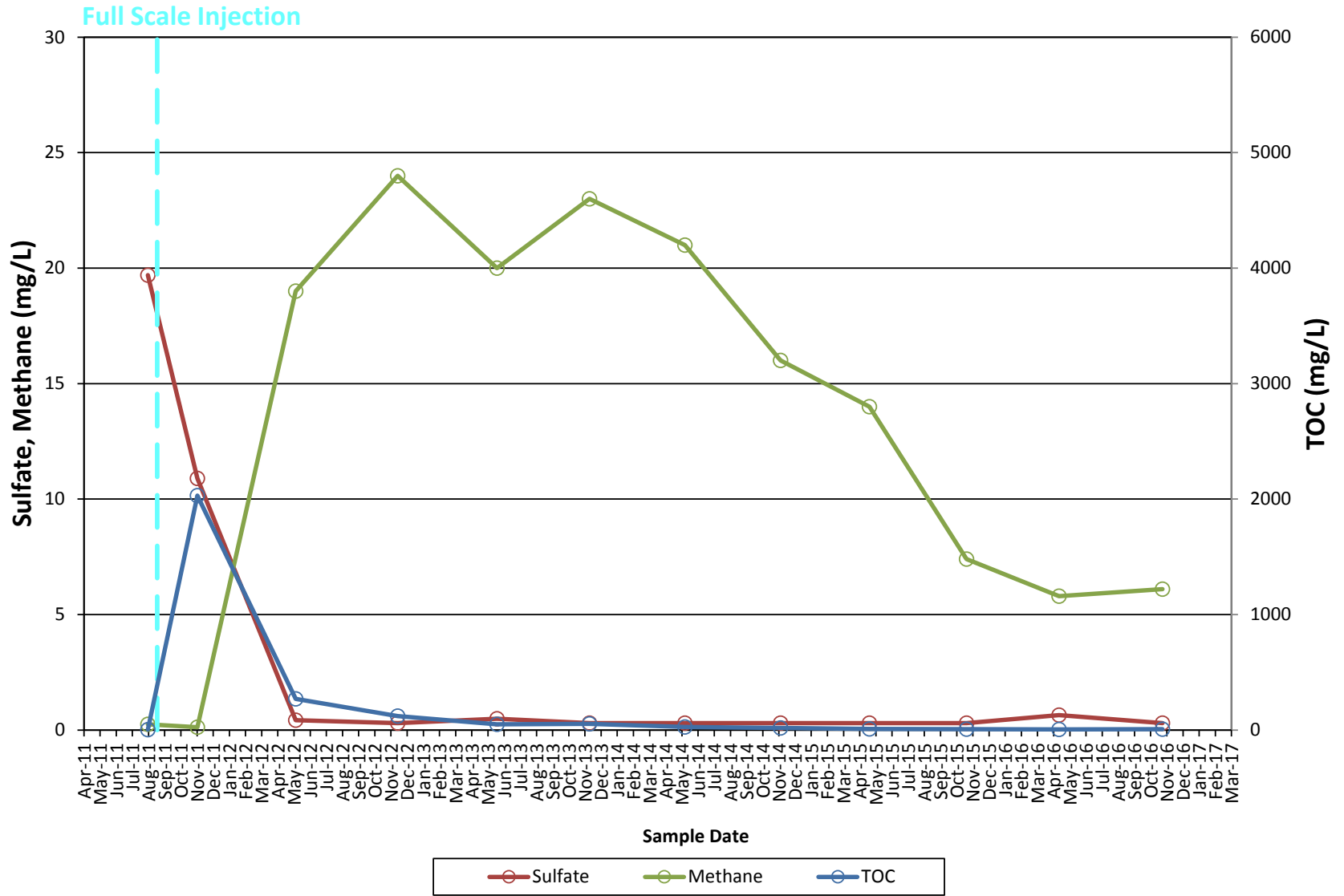
Figure
D-2



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**Redox and TOC
Plume Injection Well BDC-05-09**

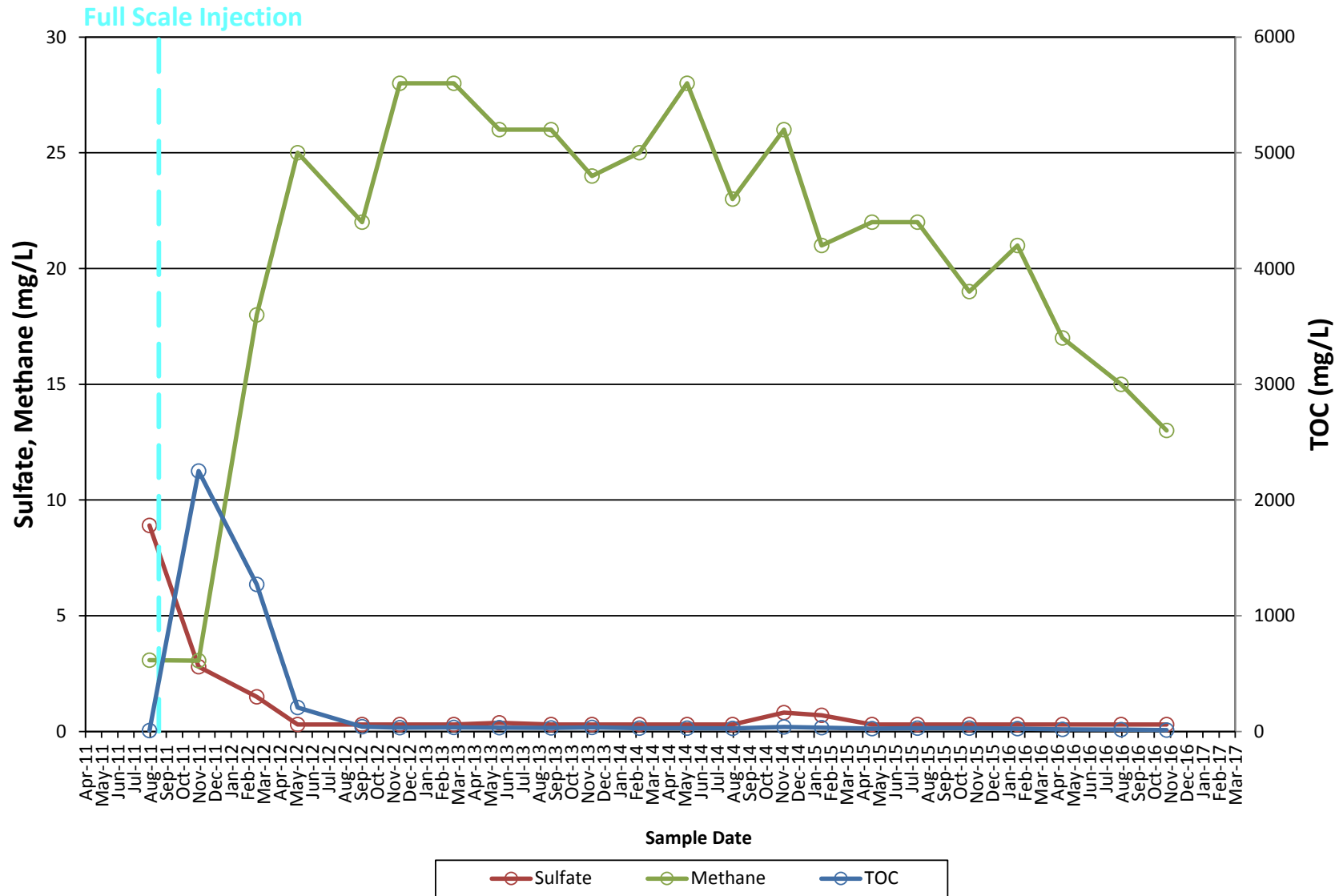
Figure
D-3



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**Redox and TOC
Plume Injection Well BDC-05-10**

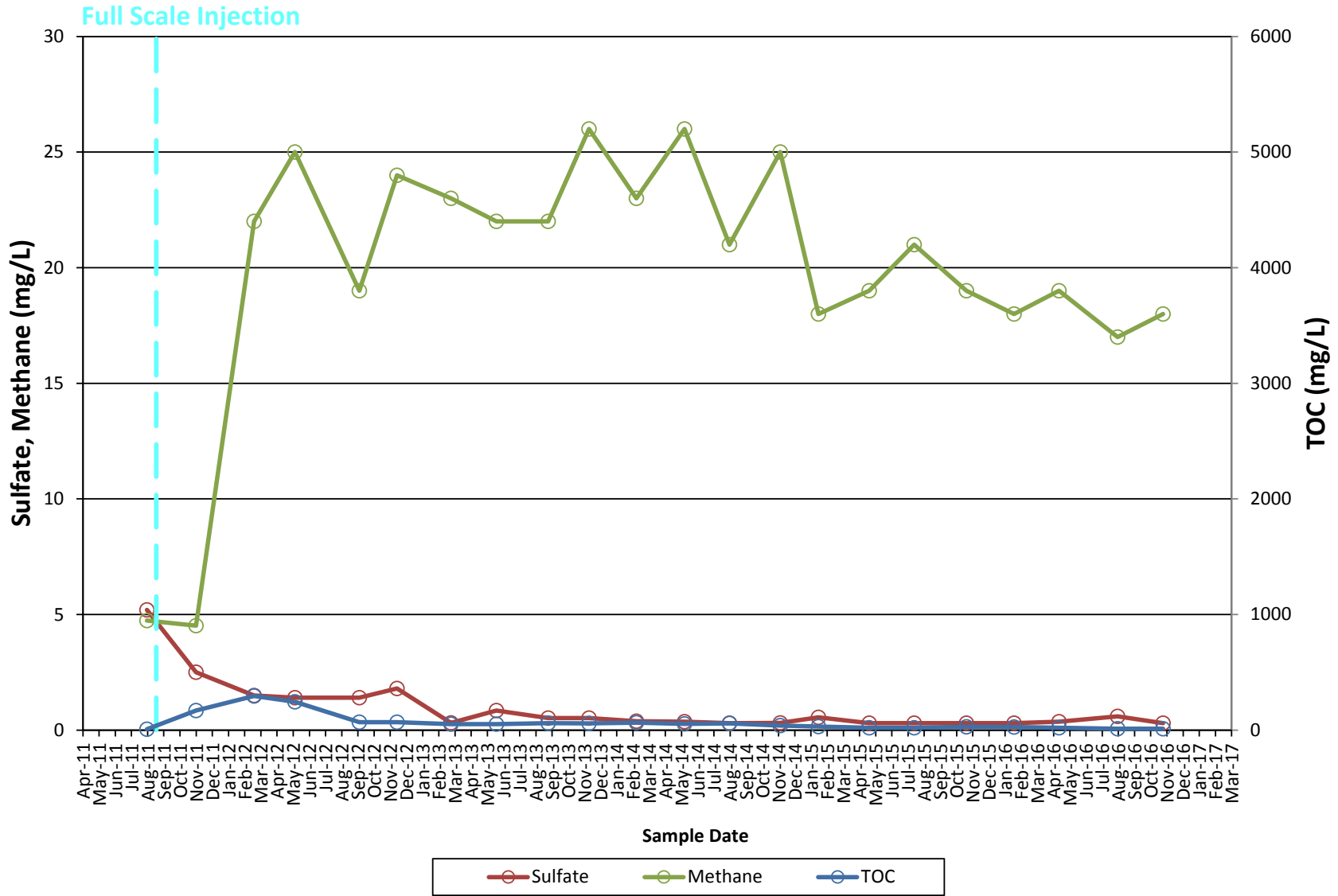
Figure
D-4



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**Redox and TOC
Plume Injection Well BDC-05-16**

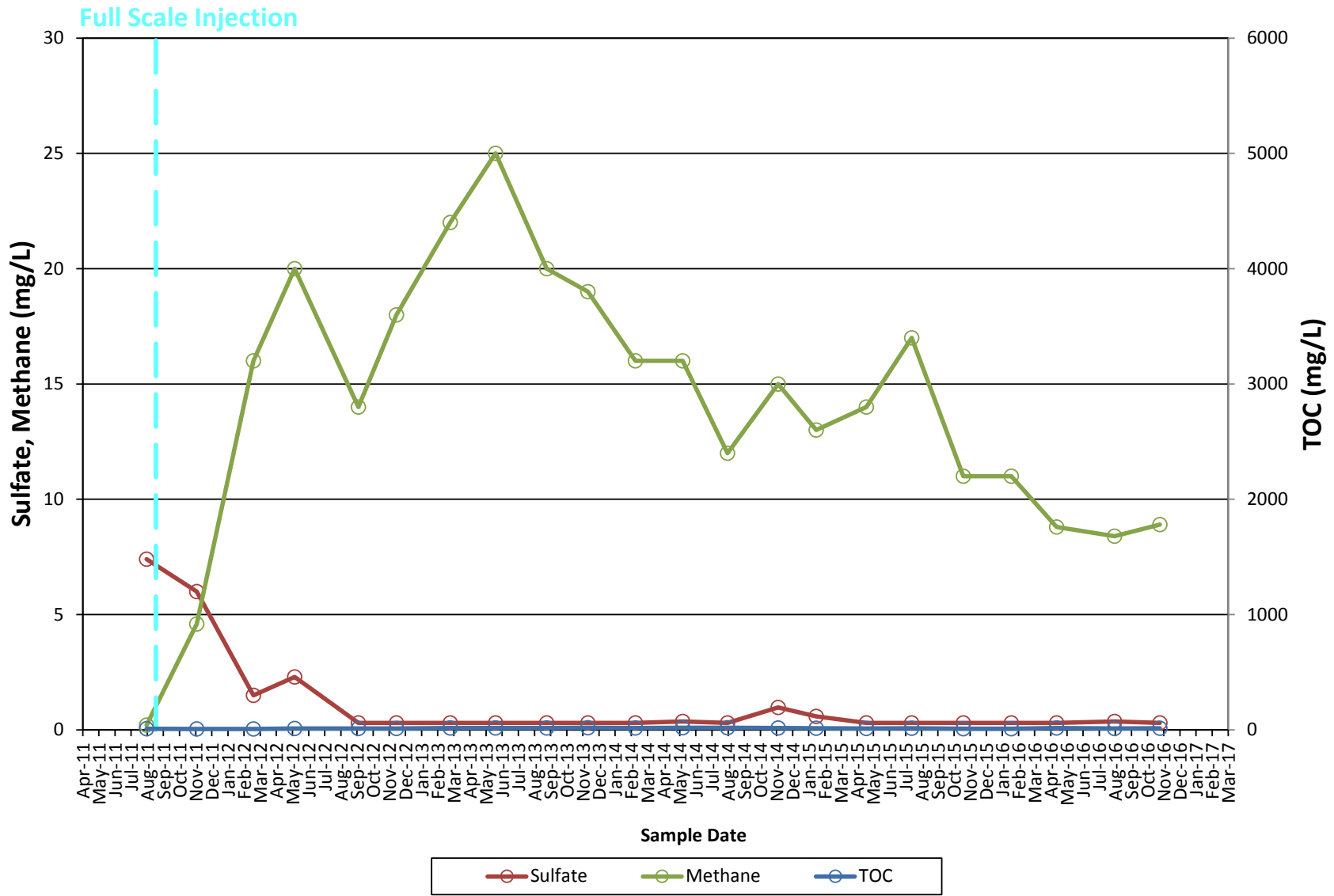
Figure
D-5



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**Redox and TOC
Plume Injection Well BDC-05-19**

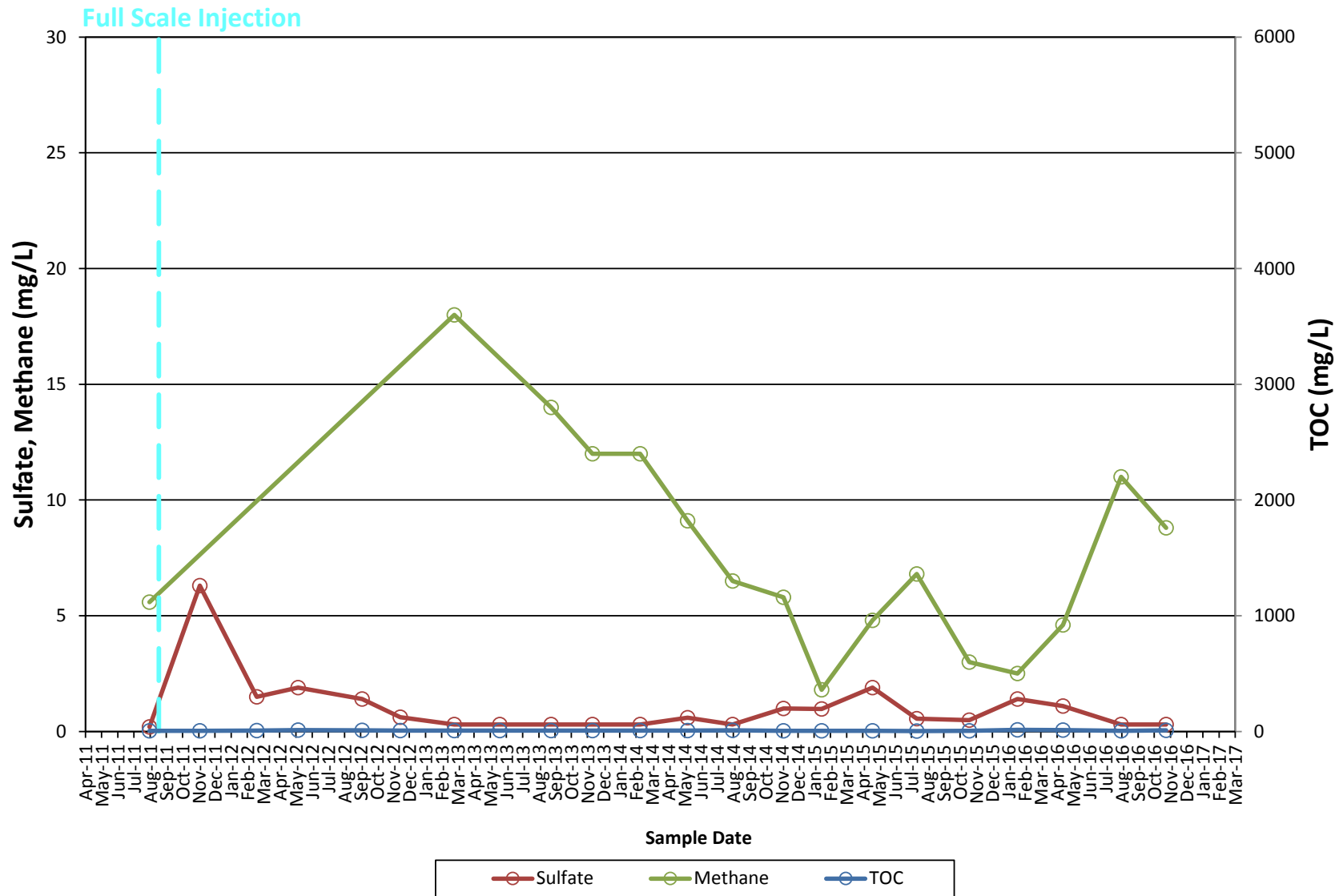
Figure
D-6



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**Redox and TOC
Monitoring Well BDC-05-20**

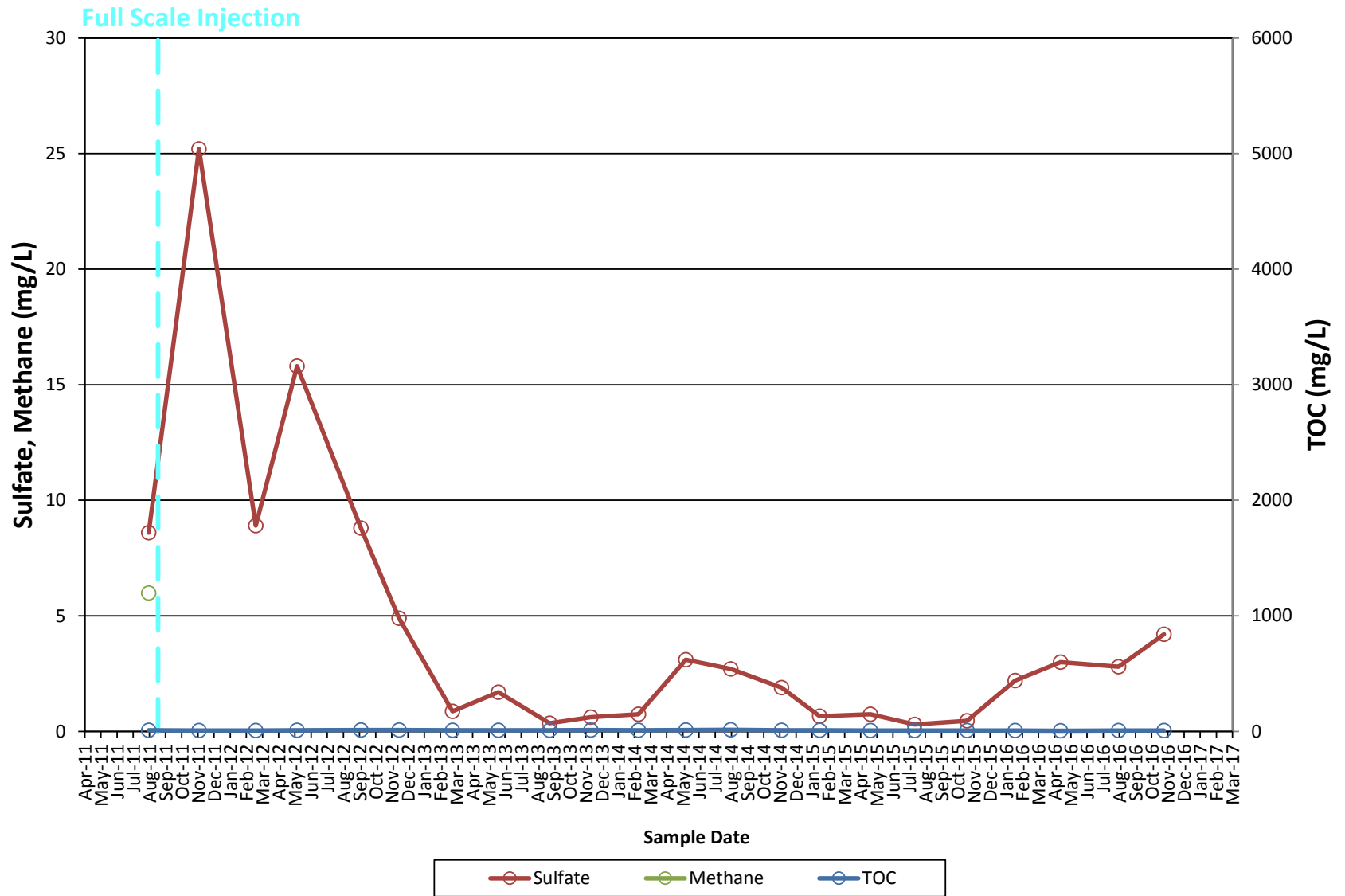
Figure
D-7



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**Redox and TOC
Monitoring Well BDC-05-21**

Figure
D-8

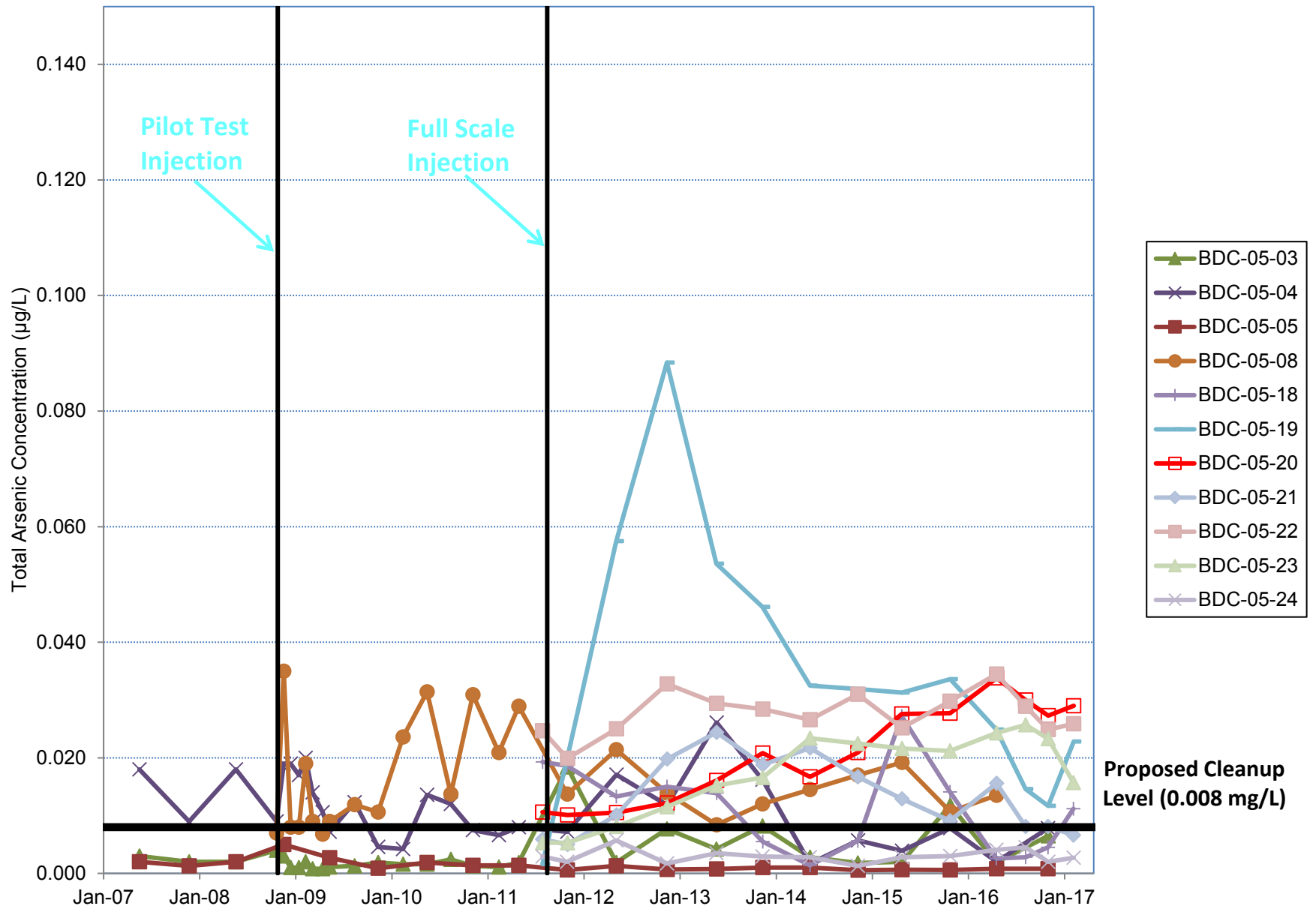


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**Redox and TOC
Monitoring Well BDC-05-23**

Figure
D-9

Time Plots – Copper and Arsenic



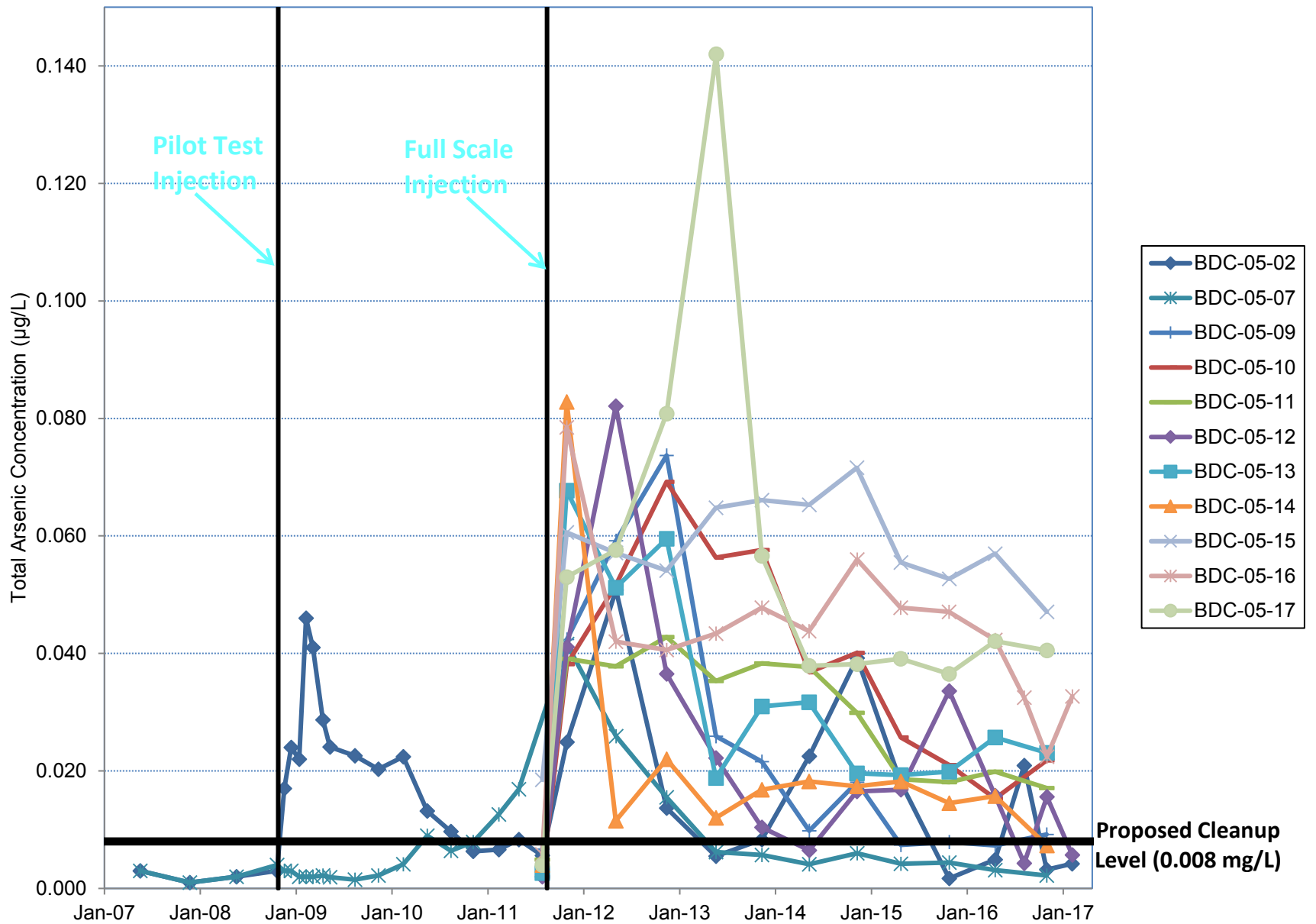
Proposed Cleanup Level (0.008 mg/L)



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Tukwila, Washington

Total Arsenic – Monitoring Wells

Figure
E-1



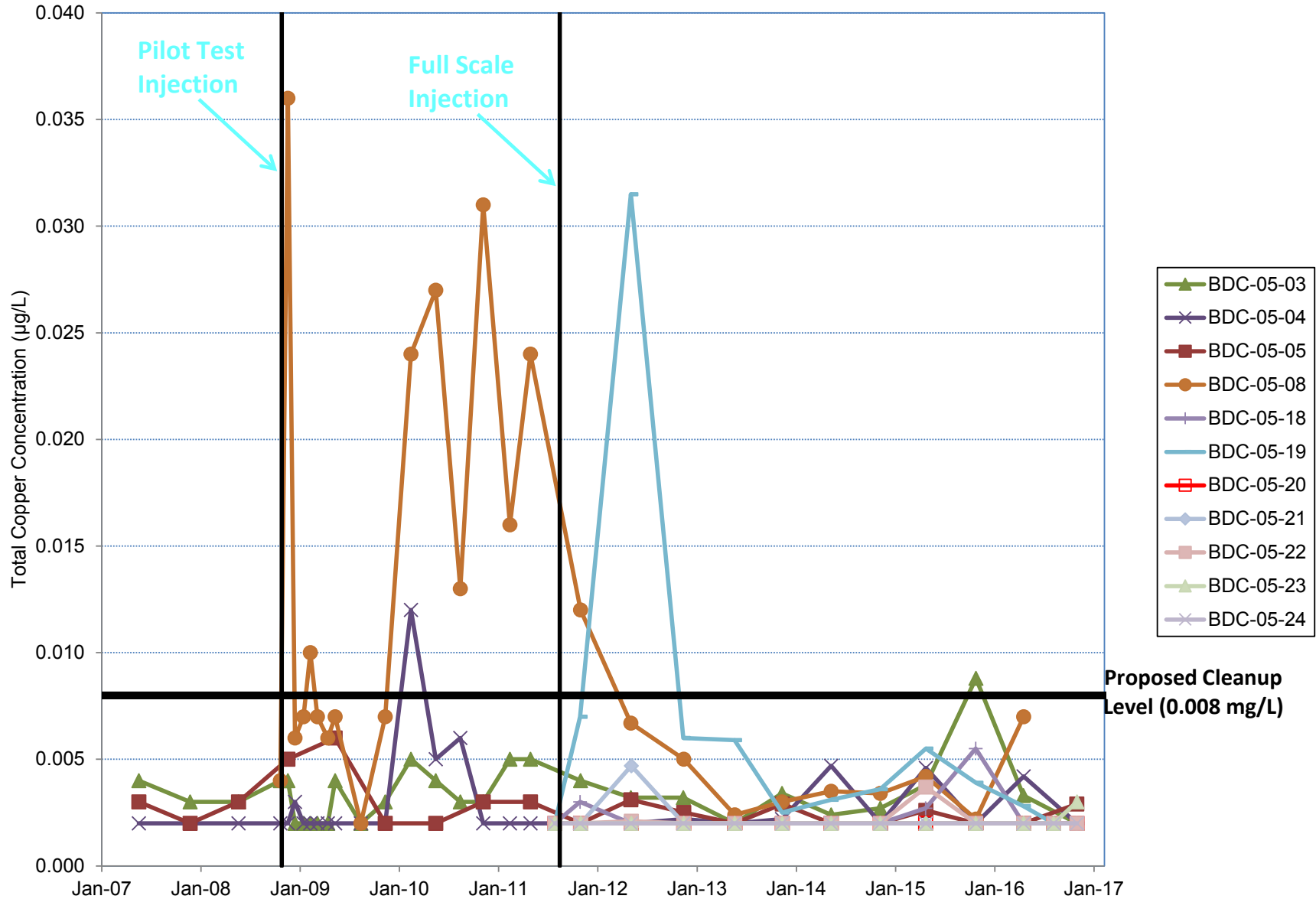
Proposed Cleanup Level (0.008 mg/L)



Boeing Developmental Center
Tukwila, Washington

Total Arsenic – Injection Wells

Figure
E-2



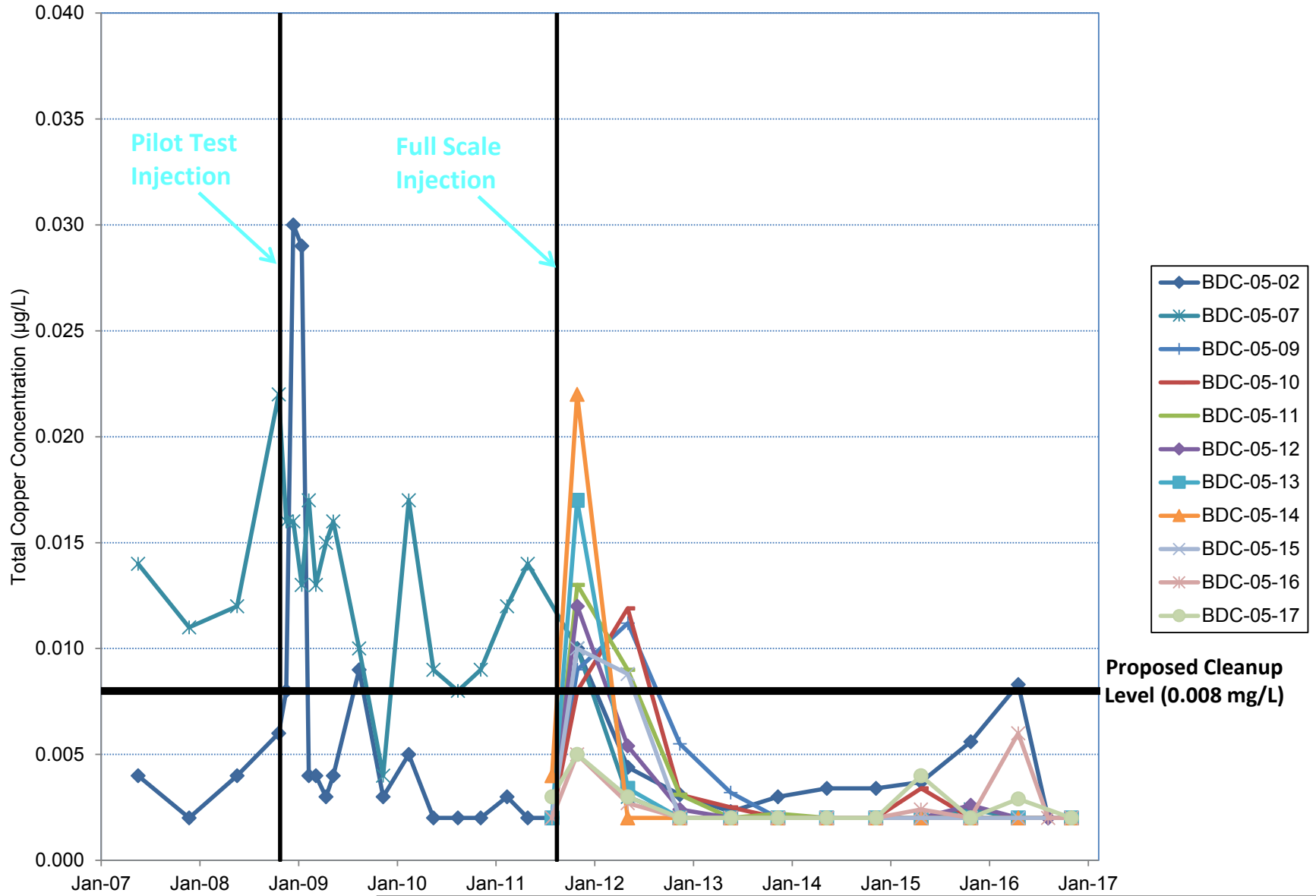
Proposed Cleanup Level (0.008 mg/L)



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Total Copper – Monitoring Wells

Figure
E-3



Proposed Cleanup Level (0.008 mg/L)

Boeing Developmental Center
Tukwila, Washington

Total Copper – Injection Wells

Figure
E-4

