Troutdale Gravel Aquifer Corrective Measure
2016 Annual Report and Five-Year Performance Evaluation
Boeing Portland Facility
Gresham, Oregon
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Prepared for

The Boeing Company

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Boeing Portland Facility
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LIST OF ABBREVIATIONS AND ACRONYMS

ft^3/min	Cubic Foot per Minute
CAAs	Correction Action Areas
CAOs	Corrective Action Objectives
cDCE	Cis-1,2-dichloroethene
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COPCs	Constituents of Potential Concern
DBS	Diffusion Bag Samplers
1,1-DCE	1,1-dichloroethene
EMC	East Multnomah County
EPA	US Environmental Protection Agency
FOG	Fats, Oil, and Greases
GAC	Granular Activated Carbon
gpm	Gallons per minute
GWTS	Groundwater Treatment System
ICA	Interim Corrective Action
ICP	Institutional Controls Plan
IRAM	Interim Remedial Action Measure
lbs	Pounds
MCLs	Maximum Contaminant Levels
µg/L	Micrograms per Liter
$\mu g/m^3$	Micrograms per cubic meter
µgmoles/L	Micromoles per Liter
mg/L	Milligrams per Liter
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
ODEQ	Oregon Department of Environmental Quality
OWRD	Oregon Water Resources Department
PCE	Tetrachloroethene
PRB	Permeable Reactive Barrier
RBC	Risk Based Cleanup Level
RCRA	Resource Conservation and Recovery Act
ROI	Radius of Injection
SCADA	Supervisory Control and data Acquisition
STS	Sump Treatment System
SVE	Soil Vapor Extraction
TCA	1,1,1-Trichloroethane
TCE	Trichloroethene
TGA	Troutdale Gravel Aquifer
TOC	Total Organic Carbon
TPH-Dx	Total Petroleum Hydrocarbons-Diesel and Motor Oil
TSA	Troutdale Sandstone Aquifer
VC	Vinyl Chloride
VOCs	Volatile Organic Compounds
%Vol	Percent by Volume
VOW	Vapor Observation Wells

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1.0 INTRODUCTION

This report documents performance of the Troutdale Gravel Aquifer (TGA) corrective measures being implemented by The Boeing Company (Boeing) at the Portland Facility in Gresham, Oregon. Remedial activities discussed in this report were conducted on the behalf of Boeing and overseen by the Oregon Department of Environmental Quality (ODEQ) in accordance with the Order on Consent (Consent Order) No. LQSR-NWR-04-12(h) (ODEQ 2008). Oversight activities were initially conducted by the US Environmental Protection Agency (EPA); however, the 2008 ODEQ Order on Consent requires Boeing to continue to perform the remedial actions included within the final remedy as specified in the EPA Order on Consent (EPA 1994), the Decision and Response to Comments (Final Decision; EPA 1997a), and Statement of Basis (EPA 1997b). In addition to the consent order-driven corrective measures, additional measures such as bioremediation and soil vapor extraction have been implemented to improve remedy performance and decrease the projected remedy timeframe.

This report includes data collected and evaluated during calendar year 2016, and provides a 5-year progress and performance review to evaluate the performance of the remedy toward achieving cleanup goals, as specified in the Final Decision. The Final Decision upheld by ODEQ requires ongoing performance monitoring to provide data for assessing progress toward achievement of corrective action objectives (CAOs). In addition to annual reporting, the ODEQ Consent Order requires a progress and performance review to be completed every 5 years. The last progress and performance review was completed in 2011 (LAI 2012a).

1.1 Report Organization

Following this introductory section, this report is organized into six main subsections as follows:

- Section 2.0 presents remedy background information including a description of the project location; and provides a brief review of the regulatory background for the corrective measures.
- Section 3.0 provides a summary of the cleanup implementation and current status of each of the components of the interim corrective measures, Consent Order corrective measures, and selected additional corrective measures (measures installed after the consent order).
- Section 4.0 presents the remedy performance data collected during the reporting period.
- Section 5.0 presents treatment system performance data collected during the reporting period.
- Section 6.0 provides a 5-year evaluation describing progress made toward attaining CAOs and restoration goals.
- Section 7.0 provides recommendations for future operation of the corrective measures, and proposed performance monitoring program modifications.

Report appendices include the following:

- Appendix A provides the BOP-7(d) boring log.
- Appendix B contains the Institutional Controls Plan (ICP) component of the corrective measures.
- Appendix C provides plots of trichloroethene (TCE) and 1,1,1-trichloroethane (TCA) concentrations verses time for TGA remedy wells.
- Appendix D provides summary tables of remedy groundwater quality, groundwater elevation data, and vapor data.
- Appendix E presents laboratory reports and data validation memorandums for data collected between January 1 and December 31, 2016.

2.0 BACKGROUND INFORMATION

The Boeing Facility is located at 19000 N.E. Sandy Boulevard (Figure 2-1) and is approximately 7 miles east of Portland International Airport. The current facility, which occupies approximately 90 acres, is used for the manufacture, assembly, and warehousing of aircraft components and subassemblies. Boeing has conducted investigations and implemented corrective actions for volatile organic compounds (VOCs) in soil and groundwater at the Boeing Facility since 1986. Additional corrective action measures have been identified and incorporated into the TGA remedial programs following finalization of the Consent Order. Table 2-1 provides a list of key reports that document the history of facility investigations and the design and implementation of corrective measures.

2.1 Interim Corrective Measures

Several interim corrective actions (ICAs) were undertaken by Boeing beginning in 1986 to stabilize VOCs in the soil and groundwater at the Boeing Facility and to address protection of human health and the environment. These ICAs included providing an alternate water supply to owners of impacted wells, decommissioning of supply wells, excavation of soil, installation and phased expansion of the ICA groundwater extraction and treatment system, installation and testing of a soil vapor extraction (SVE) system, and pilot testing of a dual-phase extraction system. These ICAs were documented in the interim measures evaluation report (LAI 1995a) and summarized again in the Phase 2 corrective measures study (CMS; LAI 1996).

2.1.1 Corrective Action Areas

Corrective Action Areas (CAAs) were implemented as part of the Phase 2 CMS (LAI 1996), the EPA Final Decision (1997a), and the EPA Statement of Basis (EPA 1997b). These CAAs were based on the known or potential presence of VOCs in soil and groundwater, and on the evaluation of the source areas identified in the Phase III Resource Conservation and Recovery Act (RCRA) facility investigation report (LAI 1995b). These CAAs are shown on Figure 2-2, and are described in detail the TGA corrective measures implementation (CMI) work plan (LAI 1997).

The objective of delineating the groundwater CAAs was to identify areas of the site that were potentially amenable to a specific corrective action approach. The delineation of these CAAs effectively separates the site into two distinct areas: 1) a downgradient corrective action area that is more amenable to groundwater restoration, and is characterized by the absence of potential source areas, generally lower groundwater VOC concentrations, and a higher aquifer transmissivity; and 2) the remaining corrective action areas for which there is less certainty with respect to restoration potential, characterized by the presence of potential source areas, higher groundwater VOC concentrations, and low aquifer transmissivity. The current groundwater performance monitoring locations used to evaluate the CAAs is shown on Figure 2-3.

Corrective actions have been implemented at the Boeing Facility to address VOC contamination in the TGA, specifically to provide protection of human health and the environment from exposure to the

TGA VOC plume through ingestion, dermal contact, or inhalation pathways. CAOs were developed to meet this goal and are as follows:

CAO-a. Decrease VOC concentrations (i.e., mass removal) throughout the site to achieve maximum contaminant levels (MCLs). If this is not feasible, then minimize the areal extent of groundwater contamination that exceeds MCLs and provide long-term containment for those areas with concentrations above MCLs.

CAO-b. Prevent exposure to TGA groundwater that contains VOCs at concentrations above MCLs.

CAO-c. Protect environmental receptors by preventing discharge of TGA groundwater to surface water at VOC contaminant concentrations that may exceed ambient water quality criteria.

CAO-d. Prevent further spread of contamination in the TGA (i.e., prevent the migration of groundwater containing VOCs above MCLs).

CAO-e. Protect groundwater quality in the Troutdale Sandstone Aquifer (TSA).

CAO-f. Facilitate existing uses of groundwater resources in eastern Multnomah County.

CAO-g. Reduce concentrations of VOCs and minimize migration of VOCs from vadose zone soil to the TGA that could compromise satisfying CAO-a for groundwater.

2.1.2 Cleanup Levels and Points of Compliance

The EPA Final Decision and Statement of Basis establish constituents of potential concern (COPC) and target groundwater cleanup levels for the TGA corrective measures based on MCLs as follows:

Constituent	Cleanup Level (µg/L)
1,1-Dichloroethene (1,1-DCE)	7
cis-1,2-Dichloroethene (cDCE)	70
TCA	200
TCE	5
Tetrachloroethene (PCE)	5
Vinyl chloride (VC)	2

µg/L = micrograms per liter

VC was not identified as a COPC, but EPA identified a cleanup level for this constituent in response to comments received on the Statement of Basis. The Final Decision established the point of compliance for the groundwater cleanup levels as throughout the plume, meaning everywhere within the TGA that is contaminated by VOCs.

3.0 CORRECTIVE MEASURES IMPLEMENTATION

This section provides a summary of the implementation and current status of each of the components of the corrective measures implemented at the site. A summary is also provided in Table 3-1. Both the Consent Order and the later selected additional corrective measures are discussed below.

3.1 Groundwater Extraction and Treatment

Groundwater extraction and treatment began in March 1989 with the installation of the ICA system as part of the Consent Order corrective measure. At the time, the ICA system consisted of nine groundwater extraction wells (E-1 through E-9) and a groundwater treatment system consisting of a 40-foot (ft) tall air stripper unit. The ICA system was designed to control groundwater flow in the TGA beneath and downgradient of the facility, and to capture and remove VOCs from TGA groundwater. Between 1990 and 1994, the ICA system was expanded to include wells E-10 through E-13. In 1996, the system was further expanded by adding extraction wells E-14 through E-16 and dual-phase well DP-1. Following corrective measures implementation, the groundwater extraction and treatment system was no longer referred to as the ICA system and was, instead, referred to as the Groundwater Treatment System (GWTS). The components of the GWTS (extraction wells, conveyance piping system, and stripper) are shown on Figure 3-1.

In 2000, the pumping at E-1 was suspended due to achievement of groundwater cleanup goals and, thus, was no longer needed for the hydraulic capture of the TGA plume (LAI 2000). Subsequently, the well was decommissioned in 2004 as part of a land transfer procedure.

Operational shutdown of extraction wells E-5 (West Corrective Action Area), E-6 and E-7 (Central Corrective Action Area), E-8 (East Corrective Action Area), and E-9 (East Yard Corrective Action Area) was conducted in the summer of 2002 due to low mass removal rates and low groundwater yields (LAI 2002). Extraction wells E-5 through E-9 remain in shutdown mode and are maintained for sampling purposes only and for resumed pumping, as warranted.

Extraction wells E-10, E-11, E-14, E-15, and E-16 (located in the West Corrective Action Area) were shut down to facilitate bioremediation injection activities in late 2008 (LAI 2009). Extraction wells E-10, E-14, and TSA extraction well EW-22 were decommissioned during 2010 in preparation for the Building 85-001 expansion project (LAI 2010a). Extraction wells E-15 and E-16 resumed pumping on December 20, 2012 after 4 years of pilot shutdown following injection of donor to these wells during the 2008 bioremediation injection program within the West Corrective Action Area. Extraction well E-11 remains shut down due to the presence of donor material injected at that well in 2008 and is currently maintained for sampling purposes only and resumed pumping, as warranted.

Extraction wells E-2 and E-3 (located in the Downgradient Corrective Action Area) were shut down with ODEQ approval (ODEQ 2015) in July 2015 because COPC concentrations were below the respective MCLs and in an effort to minimize the biofouling of these wells and the treatment system.

These wells pump aquifer zones that are along preferred pathways from the Former Vapor Degreaser Source Area where bioremediation activities are ongoing. Groundwater quality samples are collected from extraction wells E-2 and E-3 on a quarterly basis; if TCE concentrations rebound to above the MCLs for two consecutive events, then operational pumping of the specific well will be evaluated and discussed with ODEQ.

The original 40-ft tall air stripper tower and 25-horse power blower system with a design capacity of approximately 800 gallon per minute (gpm) was replaced in 2014 with a more energy efficient system designed for current groundwater extraction rates (LAI 2014a). The replacement GWTS consists of two low-profile air stripper trays run in parallel for a design flow rate of 70 gpm per unit or 140 gpm with both units operating. As part of the GWTS replacement, the Supervisory Control and data Acquisition (SCADA) system was upgraded from the old and non-supported software to the latest Wonderware software program and processing system. GWTS components and specifications are documented in the draft Operations and Maintenance (O&M) manual (LAI 2016a).

Currently, groundwater pumping is performed at the following wells as part of the TGA groundwater extraction and treatment system (Figure 3-1):

- E-4, E-12, E-13 (located in the Downgradient Corrective Action Area)
- E-15 and E-16 (located in the West Corrective Action Area)
- DP-1 (located in the Central Corrective Action Area).

3.2 Soil Vapor Extraction System

An SVE system operated in the West and Central Corrective Action Areas between 1994 and 2009, as part of the Consent Order corrective measures. Initially, a pilot test for both the SVE and dual-phase extraction systems was conducted; however, the results of the testing indicated that site conditions were not favorable for dual-phase. Upon completion of the pilot testing phase, the SVE system consisted of four vapor extraction wells (VE-3 through VE-6) in the West Corrective Action Area and one dual-phase extraction well (DP-4) in the Central CAA. A series of 14 vapor observation well pairs [VOW-1(s,d) through VOW-14(s,d)] were installed with vadose zone screens (shallow and deep) to evaluate vacuum rates and mass removal calculations. The SVE system was shut down in 2009 due to low mass removal rates and ODEQ approved the decommissioning of the system (ODEQ 2009). Cumulatively, the SVE system removed approximately 3,750 pounds (lbs) of VOCs from the unsaturated zone between 1994 and 2009.

In 2012, the SVE system was modified and retrofitted for reuses inside the 85-001 building in the Former Vapor Degreaser Source Area (LAI 2011a). During the investigation phase of the Former Vapor Degreaser Source Area, TCE vapor concentrations above the ODEQ “hot spot” screening level (290,000 micrograms per cubic meter [µg/m3]) were observed in the sub-slab interval. Elevated TCE concentrations were also reported for samples collected at-depth during drilling activities. Based on this information, vapor samples were collected from at-depth locations during drilling activities. A

total of seven multiple-purpose wells [BOP-78(i), BOP-79(i), and BOP-84(i) through BOP-88(i)] were connected to the above-grade SVE system through a series of subgrade conveyance piping to allow system operation with minimal disruption of facility operations. The retrofitted SVE system was installed and currently operates in the Vapor Degreaser Source Area. The system consists of a control panel, Rotron regenerative blower, condensate pump, knockout tank, and two 2,000-lb granular activated carbon (GAC) vessels for vapor treatment. Exhaust piping was routed from the GAC vessels to a roof stack for venting. The SVE system operates in accordance with the Boeing Portland facility-wide air discharge permit at an extraction rate of approximately 250 cubic feet per minute (ft^3/min). Vapor sampling is conducted at the seven multiple-purpose wells to monitoring vapor concentrations at-depth in the vadose zone. A total of nine vapor pins (VP-1 through VP-9) were installed in the sub-slab interval to monitor VOC concentrations. Sub-slab vapor samples were collected on a quarterly basis.

The SVE system started full-time operation in September 2012. The SVE system has operated on a full-time basis through July 2014, when the system switched to pulse pump operation, as approved by ODEQ (ODEQ 2014a). Due to decreased mass recovery and VOC mass removal rates that were below the shut-off criterion of 0.1 lbs/day, the system was pilot shutdown in July 2014. Quarterly sub-slab vapor and at-depth soil vapor sample results are utilized to determine the pulse operation timeframe for the system. Based on the vapor sample results, the SVE system has operated at the following schedule:

Date Range	SVE Operation Cycle
September 17, 2012 to June 21, 2013	Full-time operation of system
June 21, 2013 to July 22, 2013	Temporarily down to facilitate bio injection activities
July 22, 2013 to July 2, 2014	Full-time operation of system
July 2, 2014	Receive ODEQs approval to shut down system and start pulse-pump operation.
July 2, 2014 to January 29, 2015	System shut down
January 29, 2015 to June 8, 2015	Resume full-time operation of system due to increased TCE concentrations in either the sub-slab or at-depth sampling intervals
June 8, 2015 to June 29, 2015	Temporarily down to facilitate bio injection activities
June 29 to October 9, 2015	Resume full-time operation of system
October 9, 2015 to April 7, 2016	System shut down
April 7, 2016 to Present	Resume full-time operation of system

3.3 Institutional Controls Plan

Restrictive covenants in potential source areas at the site were developed as part of the Consent Order Institutional Controls Plan (ICP; LAI 2005). The ICP provides worker protection procedures and

notifications within potentially environmentally impacted areas of the site. These six areas are referred to as potential source areas and were defined based on past uses of the site. These source areas were identified as the West Source Area, Central Source Area, Former Vapor Degreaser Source Area, East Yard Source Area, Southwest Source Area, and East Source Area, as shown on Figure 2-2.

Investigations have been conducted within all of the potential source areas to characterize subsurface conditions and potential impacts to workers. Based on the soil, shallow groundwater, and/or soil vapor sample results collected as part of the investigation, ODEQ has either approved of additional corrective measures (Former Vapor Degreaser Source Area) or the removal of the source areas from the ICP. ODEQ has approved removal of the West Source Area, Central Source Area, Southwest Source Area, East Source Area, and East Yard Source Area from the ICP (ODEQ 2011, 2012, 2014b, and 2016a) due to low risk levels of exposure to workers.

Investigation results for the Former Vapor Degreaser Source Area indicated the need for additional corrective measures. The investigations collected representative samples of soil vapor and groundwater. Soil vapor samples were collected from sub-slab and from variable depths in the vadose zone. Groundwater samples were collected at various depths from wells that were installed through the TGA to terminate in the upper 2 ft of the confining layer between the TGA and the underlying TSA [i.e., within the second siltstone unit in confining layer (CU1)]. TCE concentrations were above the MCL in groundwater and above the screening levels for vapor within the sub-slab and at-depth sample intervals. Based on the findings of the investigations, two additional corrective action measures have been implemented consisting of SVE and enhanced *in situ* bioremediation. The SVE system and the in situ bioremediation are working in conjunction to remediate VOC contamination within the vadose and saturated zones of the TGA.

Between approximately 1963 to 1968, a vapor degreaser was operated inside the 85-001 building. In 1974, the degreaser was dismantled due to suspected leakage and replaced with a new vapor degreaser machine, which was subsequently taken out of service and dismantled in the late 1980's. Historical releases of TCE from former vapor degreasers inside Building 85-001 constitute a primary source of TCE contamination in the TGA. Prior to 2009, the area of the former degreasers was deemed inaccessible for soil and groundwater investigation due to limited access for drilling inside the active manufacturing building and difficult geologic conditions (dense to very dense soil with cobbles and boulders) that require specialized drilling equipment. Advancement in limited-access roto-sonic drilling techniques allowed for the investigation to occur, with three phased investigations conducted within the area between 2009 and 2011 (LAI 2010b, 2011b,c, and 2012b). During the investigation phases, a total of 17 groundwater wells and 3 soil vapor observation wells were installed in the degreaser source zone and downgradient. Seven of these wells [BOP-78(i), BOP-79(i), and BOP-84(i) through BOP-88(i)] are multiple-purpose sampling and remediation wells with a well screen section in the vadose zone and a screen section below the water table. The multiple-purpose wells are utilized for SVE operation, groundwater quality monitoring, and aquifer injection for *in situ* bioremediation. Well locations are shown on Figures 2-3 and 4-4.

3.4 Enhanced Bioremediation

Enhanced *in situ* bioremediation is currently being implemented in conjunction with the GWTS (provides hydraulic capture of dissolved plume) to remediate the more persistent areas of groundwater contamination as an additional corrective measure. *Aerobic* biodegradation is being utilized to treat the petroleum-based coolant material release at the 85-105 building in the Coolant Release Area. *Anaerobic* bioremediation is being utilized for reductive dechlorination of TCE and its breakdown products (cDCE and VC) to non-toxic end products (ethane/ethene) in the Former Vapor Degreaser Source Area in the 85-001 building.

3.4.1 Aerobic Biodegreadation-Coolant Release Area

In 2006, coolant material was discovered in the 85-105 building footing drain sump (sump). Immediately after the coolant release, Boeing disconnected the sump discharge from the GWTS and routed the accumulated water to temporary storage tanks for batch testing and processing through the facility treatment system for disposal to the sanitary sewer. Between August 2007 and August 2012, water collected in the 85-105 building footing sump was recovered and treated using the Sump Treatment System (STS). The STS consisted of a conveyance line that transported the accumulated water from the sump vault to Building 85-124, where the water was routed through an oil/water separator, then monitored by an in-line fats, oil, and grease (FOG) monitor. Water was discharged to the sanitary sewer, with automatic routing through a GAC vessel for pre-treatment when FOG concentrations were elevated. Based on STS influent groundwater concentrations being consistently below the stormwater discharge criteria, the system was shut down in August 2012 with approval by ODEQ (ODEQ 2012). Following STS shutdown, water that accumulates in the sump passes through the GWTS prior to discharge to the Storm Drain Creek; this is the same route of discharge used prior to the 2006 coolant release.

An investigation was conducted to evaluate the vertical and horizontal extent of the coolant release to the TGA by monitoring existing nearby wells and installing eight monitoring wells (LAI-1 through LAI-8) and five injection wells (I-1 though I-5), as shown on Figure 2-3. The results of the investigation indicated that the petroleum-based coolant, which floated on the water table, did not migrate far from the area of release because the building footing drain and sump acted as a collection system for the released coolant. The investigation also confirmed that nearby Upper TSA wells did not show evidence of impacts due to the coolant release (LAI 2007a).

Application of aerobic biodegradation as an interim remedial action measure (IRAM; LAI 2007b) was approved by ODEQ (ODEQ 2007). Biodegradation has been stimulated by injecting a slurry of water and an oxygen-releasing compound (EHC-O^{TM}) into injection wells. Below is a summary of the completed injections in this area:

Injection Event	EHC-O Donor Material (lbs)	EHC-O and Water Mixture (gallons)
(Pilot Injection) February 2008	850	1,000
September 2008	2,088	2,700
June 2010	2,100	2,800
June 2011	2,000	2,500
April 2012	2,100	2,700
January 2013	2,000	2,500
July 2015	2,000	2,500

Substantial reduction in diesel- and motor oil-range total petroleum hydrocarbon (TPH-Dx) concentrations have been observed in the coolant release wells with the exception of LAI-4, where concentrations are above the site-specific cleanup level (1.35 milligrams per liter [mg/L]). The maximum TPH-Dx concentration was reported at well LAI-4 at 31,800 mg/L; however, concentrations are currently below 30 mg/L. Another injection is currently planned for 2017 to address the remaining TPH-Dx at LAI-4.

3.4.2 Anaerobic Bioremediation-Former Vapor Degreaser Source Area

Anaerobic bioremediation is currently being implemented in the Former Vapor Degreaser Source Area within the 85-001 building. Investigation results indicated elevated concentrations of TCE in this area of the site and in the Downgradient Corrective Action Area (LAI 2009). A sequence of bioremediation injections have been conducted within the Former Vapor Degreaser Source Area, as summarized below:

- In November 2010, a pilot test injection was conducted at well BOP-72(i). During the injection, a total of 900 gallons of LactOil electron donor substrate and potable water mixture was injected. A larger injection volume was intended, but low injection rates indicated low hydraulic conductivity conditions in the direct vicinity of the well and prevented injection of additional volume.
- In December 2011, a Permeable Reactive Barrier (PRB) was created on the downgradient edge of the source area by injecting electron donor substrates to well BOP-74(i). BOP-74(i) is located directly downgradient of the former vapor degreaser(s) and in the area of maximum TCE concentrations in the groundwater. Well BOP-74(i) has a high injection flow rate (50 to 80 gpm), which indicates the well is located in a preferential flow path of higher hydraulic conductivity and groundwater flux from the source. During this initial injection, the PRB well was injected with 15,000 gallons of injection solution, achieving a radius of injection (ROI) of approximately 40 ft (LAI 2014b). The injection solution consisted of 15 drums of LactOil and sodium lactate mixed with potable water. Lactoil donor substrate consists of ethyl lactate [36 percent by volume (%vol)] and vegetable oil (41 %vol), with the remaining balance consisting of surfactants and water.
- In August 2012, a second PRB injection was conducted to maintain conditions conducive to treatment, create a larger ROI, achieve more extensive downgradient treatment, and increase

the longevity of treatment between injection events. To achieve these objectives, the second injection utilized double the volume of the first injection and a 40 percent higher concentration of electron donor. Approximately 27,800 gallons of potable water was mixed with 40 drums of LactOil to create 30,000 gallons of 7.3 percent LactOil solution that was injected to well BOP-74(i). Monitoring results indicated that the second PRB injection resulted in a ROI of at least 60 ft and less than 80 ft.

- In July 2013, an initial injection was completed at seven source area wells located upgradient of PRB injection well BOP-74(i) and immediately adjacent to the former vapor degreasers (source zone). The injection was conducted at the seven multiple-purpose source area wells [BOP-78(i), BOP-79(i), and BOP-84(i) through BOP-88(i)]. The injection event utilized a dedicated mixing and injection area created near the SVE unit and the sub-grade conveyance piping installed during the installation of the sub-grade SVE piping. Packers installed between the two screened intervals of each well were inflated during the injection to deliver injection fluid to the aquifer and not the vadose zone. A manifold at the mixing station allowed for simultaneous injection of the seven wells while measuring individual flow rates and pressures. The injection solution was delivered by gravity feed from the mixing tank due to relatively slow flow rates of individual wells (4.8 to 11.7 gpm). Each of the seven wells was injected with approximately 1,400 gallons of injection solution. A total of 9,800 gallons of injection solution consisted of approximately 9,200 gallons of potable water and 550 gallons of LactOil (5.6 %vol).
- In July 2014, a combined injection event delivered donor injection fluid both to the PRB and to source area wells. This event constituted the third injection to the PRB [well BOP-74(i)] and the second injection to the seven source area wells. The PRB injection volume was the same as the prior injection (30,000 gallons) and the total volume injected to the source area wells was doubled to 20,000 gallons, for a total of 50,000 gallons injected. The volume for source area injection wells was increased based on injection rates achieved during the first injection event and to increase to resulting extent of treatment. The injection solution was modified to utilize crude glycerin, a local and sustainable byproduct of biodiesel production, in place of the ethyl lactate component of LactOil used for prior injections. Ferrous sulfate was also added to the injection solution to promote complementary abiotic degradation of TCE and cDCE.
- In June 2015, a combined injection event delivered donor injection fluid both to the PRB and to source area wells. The target PRB injection volume was 30,000 gallons, but the actual injection volume was only 20,000 gallons due to reduced injection flow rates. The target volume injected to the source area wells was 20,000 gallons; however, a total of 30,000 gallons were injected (source well target volume plus the extra volume from the PRB injection). The injection solution was the same as the prior injection (crude glycerin, ferrous sulfate, and Textrol BR (TBR).

3.5 Performance Monitoring

Performance monitoring is a Consent Order corrective measure that includes the collection of subsurface quality samples to evaluate remedy progress. The groundwater performance monitoring program consists of groundwater level elevation measurements, collection of groundwater quality samples, and collection of influent and effluent samples from the GWTS. The groundwater performance monitoring program is evaluated yearly and modified based on the continued remedy of the dissolved VOC plume and with ODEQ's approval. The current groundwater monitoring program is presented in Table 3-2.

3.5.1 Well Decommissioning

TGA groundwater monitoring wells D-2(i), D-3(i), and DP-4(i) were decommissioned in November 2016 in accordance with the Oregon Water Resources Department (OWRD) regulations. Decommissioning was by overdrilling methods described in the work plan (LAI 2016b), which was approved by ODEQ (ODEQ 2016b). These wells had been removed from the performance monitoring program and decommissioned because groundwater quality met the established cleanup levels. The locations of the decommissioned wells are shown on Figure 3-2 and the construction details of wells are summarized in Table 3-3.

3.5.2 TGA Well Installation

In October 2016, groundwater monitoring well BOP-7(d) was constructed in the Downgradient Corrective Action Area near existing well BOP-7(i) and former monitoring well BOP-7(s). Existing well BOP-7(i) is screened partly in the lower portion of the TGA and the upper siltstone layer of the confining unit between the TGA and the underlying TSA, similar to well BOP-57(ib). Based on the placement of the screened intervals of the two wells, the groundwater quality is more representative of the siltstone unit and not the TGA. Water quality data for BOP-7(i) and BOP-57(ib) are collected for informational purposes as they are not indicative of water quality in either the TGA or TSA.

Well BOP-7(d) was constructed with a 10-ft long screen installed fully in the lower portion of the TGA to represent water quality in the northwestern portion of the site. BOP-7(d) has been added to the groundwater monitoring plan with samples being collected on a quarterly basis and analyzed for VOCs using diffusion bag samplers (DBS). The BOP-7(d) well log is presented in Appendix A.

4.0 2016 REMEDY PERFORMANCE DATA RESULTS

This section presents a summary of performance monitoring data collected during this reporting period (calendar year 2016). This data includes TGA and TSA groundwater quality data, groundwater elevation data, groundwater extraction well performance data, and GWTS effluent water quality data. This section of the report also provides an evaluation, based on these performance monitoring data, of the progress made toward attaining the CAOs (Section 2.1.1) that are to be met during implementation of the corrective action measures.

4.1 TGA Groundwater Elevation Data

Water level measurements were collected at all of the TGA performance monitoring well locations in conjunction with the TGA water quality sampling events (i.e., in February and August) and in accordance with the Performance Monitoring Program (Table 3-2). Groundwater levels were measured with an electronic water meter and groundwater elevations were calculated (Table 4-1) from the surveyed reference points at individual wells. Groundwater elevation contours and inferred groundwater flow directions for the February and August 2016 events are presented on Figures 4-1 and 4-2. The TGA groundwater flow continues to be observed toward the northwest in areas not included in the radius of influence of the extraction wells. Groundwater elevation contour data indicate the active pumping at extraction wells in the Downgradient Corrective Action Area (E-4, E-12, E-13); West Corrective Action Area (E-15 and E-16); and the Central Corrective Action Area (DP-1) assists with providing hydraulic capture of COPC impacted groundwater.

4.2 TGA Groundwater Quality

TGA groundwater sampling is generally conducted in February (semiannual) and August (Annual) with August being the more extensive of the two events. In addition, groundwater samples were collected on a quarterly basis for active extraction wells, semiannual basis for extraction wells that are temporarily shut down, and on an annual basis for non-pumping extractions wells that have been utilized only for monitoring purposes. In addition, quarterly sampling is conducted at wells located within the Former Vapor Degreaser Source Area. The TGA groundwater monitoring program is summarized in Table 3-2 and well locations are shown on Figure 23.

Groundwater samples from each sampling event were analyzed for VOCs to evaluate the remediation progress of the TGA dissolved-VOC plume. A summary of 2016 analytical results for COPCs are presented for TGA monitoring wells and extraction wells in Table 4-2. The estimated extent of TCE, the compound with the highest mass in the TGA dissolved-VOC plume, is presented on Figures 4-3 and 4-4. Laboratory report and data validation memorandums for samples collected between January 1 and December 31, 2016 are included in Appendix E. Time series plots of historical selected COPCs are presented in Appendix C. Historical COPCs data is summarized in Appendix D. Additional parameters were analyzed for wells in the Former Vapor Degreaser Source Area, as described below.

4.2.1 West Corrective Action Area

The groundwater remedy in the West CAA is monitored at monitoring wells BOP-16(i) and BOP-57(ia), shutdown extraction wells E-5 and E-11, and operating extraction wells E-15 and E-16. TCE and TCA concentration trends are presented in Appendix C on Figures C-1 through C-6. Evaluation findings are as follows:

- TCE: TCE concentrations were observed to fluctuate near the MCL at BOP-16(i) (1.8 to 8.7 µg/L) and BOP-57(ia) (2.4 to 11 µg/L); and, concentrations consistently remain above the MCL at extraction well E-16 (6.3 to 8.8 µg/L). Well BOP-57(ib) is partly screened in the lower TGA and the upper siltstone layer of the confining layer and is, therefore, not representative of TGA groundwater; data for BOP-57(ib) is included in Table 4-2 for informational purposes only.
- TCA, PCE, cDCE, and 1,1-DCE: These COPCs were either not detected at the reporting limits or reported at concentrations below the respective MCLs
- VC: VC concentrations were reported above the MCL only at E-15.

4.2.2 Central Corrective Action Area

TCE and TCA concentration trends at TGA monitoring wells [BOP-10(i), BOP-56(i), and BOP 59(i)] and extraction wells (E-6, E-7, and DP-1) located in the Central CAA are presented in Appendix C on Figures C-7 through C-12. Evaluation findings are as follows:

- TCE: TCE concentrations at the other area wells continue to be above the MCL during the reporting period; however, 2016 concentrations continue to decrease over time. Examples of the decreasing concentration trend include BOP-56(i) with a maximum TCE concentration of 210 µg/L in March 1998 compared to the current concentration of 11 µg/L in August 2016, and well BOP 59(i) with a decrease from 1,800 to 5.7 µg/L (August 1997 to August 2016). While TCE concentrations continue to be above the MCL at extraction well DP-1, concentrations have decreased over time from 1,000 to 26 µg/L (October 1998 to August 2016).
- PCE: PCE concentrations were detected above the MCL (5 µg/L) at BOP-10(i), E-6, and E-7, and active extraction well DP-1. The highest concentration was reported at E-7 (37 µg/L in August 2016); however, concentrations have steadily decreased since November 2008 when the maximum concentration (300 µg/L) was reported at this well.
- cDCE: cDCE concentrations above the MCL were detected at active extraction well DP-1 with concentrations ranging from 74 to 88 µg/L. cDCE concentrations in other area wells are below the MCL.
- Other COPCs have been consistently below the MCLs at all area wells.

4.2.3 Coolant Release Area

TCE and TCA concentration trends for the three coolant release wells used to evaluate the dissolved VOC plume (LAI-4, LAI-6, and LAI-7) are shown on Figures C- 13 through C-15. The three coolant monitoring wells were installed in 2006 in response to the coolant release incident; however, VOCs are also sampled from the three wells to monitor the dissolved VOC plume. LAI-6 was removed from

the VOC monitoring program following 2012 due to TCE concentrations routinely below the MCL. Wells LAI-4 and LAI-7 mark the southeastern edge of the dissolved VOC plume.

COPC concentrations were below the respective MCLs for the coolant release wells, with the exception of one detection of TCE at 5.1 µg/L. TPH results for the coolant release area are discussed in Section 4.2.8.

4.2.4 East Yard and East Corrective Action Areas

TCE and TCA concentration trends at the East Yard CAA are shown on Figures C-16 and C-17, while concentration trends for the East CAA are presented in Appendix Con Figure C-18. No TGA COPCs were reported above the respective MCLs for either the East Yard or the East CAAs.

4.2.5 Southwest Corrective Action Area

TCE and TCA concentration trends at monitoring well BOP-9(i) within the Southwest CAA are presented in Appendix C on Figure C-19. No extraction wells exist within the Southwest CAA. Evaluation findings are as follows:

- TCE: concentrations were 30 and 35 µg/L, which are above the MCL (5 µg/L). Concentrations have decreased from the historic maximum of (1,600 µg/L in January 1989); however, concentrations increased from the historical minimum (3.4 µg/L in August 2008).
- Other COPCs concentrations are below their respective MCLs.

4.2.6 Downgradient Corrective Action Area

TCE and TCA concentration trends at monitoring wells [BOP-7(i), D-7(i), D-8(i), D 11(i), and D-12(i)] and at extraction wells (E-2, E-3, E-4, E-12, and E-13) within the Downgradient CAA are presented in Appendix C on Figures C-20 through C-30. Monitoring well D-2(i) was decommissioned in October 2016. Well BOP-7(d) was installed and sampled in November 2016. A total of four monitoring wells [D-7(i), D-8(i), D-11(i), and D-12(i)] and one extraction well (E-13) are located north of NE Sandy Boulevard, while the remaining wells are located south of the roadway, as shown on Figure 2-3. Wells south of the road are closer to higher concentration portions of the groundwater plume and source areas. Evaluation findings for the reporting period are as follows:

- North of NE Sandy Boulevard: With the exception of persistent TCE exceedances at monitoring well D-8(i) and extraction well E-13, COPC concentrations were below their respective MCLs. TCE concentrations at well D-8(i) have been consistently above the MCL; however, concentrations show a steady decrease from the maximum concentration (570 µg/L in 1988) to current concentrations 26 and 32 µg/L. TCE concentrations at extraction well E-13 were also consistently above the MCL; concentrations ranged of 10 and 13 µg/L.
- South of NE Sandy Boulevard: Extraction wells E-2 and E-3 have remained in shutdown mode since July 2015 because COPC concentrations were consistently below the respective MCLs and to minimize the amount of biofouling accumulation associated with pumping in preferred pathways from the Former Vapor Degreaser Source Area where bioremediation activities are ongoing (ODEQ 2015). COPC concentrations at E-2 remained below the respective MCLs. At

E-3, TCE was below the MCL for the first three quarters, then detected at 9.2 µg/L in November; VC concentrations were above the MCL (max 3.5 µg/L) during three quarters and not detected in August. If TCE concentrations remain above the MCL for two consecutive quarterly sampling event, then the resumed operation of E-3 will be evaluated with ODEQ. All COPCs were below their MCLs for the other wells in this area, with the following exceptions:

- TCE concentrations ranged from 5.1 to 11 µg/L at the newly installed well BOP-7(d). Two diffusion bags were installed in the screened interval to evaluate potential vertical distribution. As noted above, well BOP-7(i) is partly screened in the siltstone layer underlying the TGA and is included for information purposes.
- Extraction wells D-4 and E-12 had TCE concentrations ranging from 16 to 26 µg/L.

4.2.7 Former Vapor Degreaser Source Area

The groundwater monitoring for the Former Vapor Degreaser Source Area is performed at wells BOP-72(i) through BOP-88(i). TCE and TCA concentration trends at monitoring wells [BOP-72(i) through BOP-77(i), and BOP-80(i) through BOP-83(i)], and source area multiple-purpose (vadose zone and saturated zone screens) wells [BOP-78(i), BOP-79(i), and BOP-84(i) through BOP-88(i)] are shown on Figures C-31 through C-42.

A total of five bioremediation injections have been completed in this source area following pilot testing. The first two injections (2011 and 2012) were conducted at well BOP-74(i) to create a treatment PRB in a highly permeable zone directly downgradient of the former vapor degreasers. Bioremediation injection in 2013 was to seven wells located in and upgradient of the degreaser source. Bioremediation injections in 2014 and 2015 were to the seven source area wells and to the PRB well BOP-74(i). 2016 TCE concentrations are shown with prior maximums on Figure 4-4. 2016 results indicate a continued decline in the concentrations of COPCs. TCE has decreased substantially from prior maximums with biodegradation to breakdown products cDCE and VC and to non-toxic end products ethene and ethane. Further discussion of remediation progress in this area is presented in Section 5. Comparison of 2016 COPC concentrations to MCLs is as follows:

- TCE: TCE concentrations were above the MCL at six wells[BOP-72(i), BOP-75(i), BOP-77(i), BOP-82(i), BOP-83(i), and BOP-88(i)] as presented on Figure 4-4. This compares to 14 wells that had TCE concentrations above the MCL during baseline source area monitoring in November 2011 and February 2012. Furthermore, the highest TCE concentration [10 µg/at BOP-83(i) in November 2016] is much lower than prior maxima. Substantial concentration reduction is most apparent at well BOP-73(i), which is located directly downgradient of the two former degreasers and has not been utilized as an injection well during bioremediation activities. TCE concentrations at BOP-73(i) have decreased from the historical source zone maximum concentration of 17,000 µg/L (November 2013) to a maximum of 1.5 µg/L during 2016; this represents a 99.99 percent decrease.
- cDCE: cDCE concentrations were nondetect at the laboratory reporting limit or below the MCL, with the exception of well BOP-88(i). cDCE was detected twice above the MCL at well BOP-88(i) with concentrations of 100 and 110 µg/L.

- VC: VC concentrations were above the MCL (2 µg/L) at 11 source area wells with exceedances ranging from 2.1 to 13.0 µg/L. VC concentrations at BOP-73(i) have decreased from the historical maximum concentration of 13,000 µg/L (August 2014) to ranging from non-detect at the laboratory reporting limit to 8.8 µg/L during 2016.
- Other COPCs were not detected above their MCLs during this reporting period.

4.2.8 Coolant Release

Groundwater monitoring to evaluate the lateral extent of the coolant release and to monitor the effects of the EHC-O™ injections is conducted semiannually at three TGA coolant release monitoring wells (LAI-4, LAI-7, and LAI-8), and annually from eight monitoring wells (LAI-1 through LAI-8). The 2016 groundwater analytical results for total TPH-Dx from these wells are summarized in Table 4-3 and are shown on Figure 4-5.

With the exception of well LAI-4, TPH-Dx concentrations in the coolant release area wells are currently below the laboratory reporting limits for the respective carbon ranges. Historically, total TPH-Dx concentrations were reported above the site-specific cleanup level at LAI-1, LAI-4, LAI-5, LAI-6, LAI-7, and LAI-8. Wells LAI-8 has been dry since November 2011; therefore, no groundwater samples have been collected.

The highest total TPH-Dx concentrations have consistently been observed at well LAI-4; therefore, this well is a conservative indicator of treatment progress in the coolant release area. Total TPH-Dx concentrations at LAI-4 have decreased from the initial maximum concentration (31,800 mg/L in August 2006) to 29.1 mg/L (August 2017), a 99.91 percent reduction. This included a marked decrease in concentrations due to free-product recovery efforts followed by additional concentration reduction through bioremediation injection activities. Total TPH-Dx concentrations at this well have repeatedly decreased after an injection event followed by rebound as the injected EHC-O is consumed; however, concentrations exhibit an overall decline. This repeated rebound total TPH-Dx concentrations suggest some residual TPH mass in the vicinity of this well. Well LAI-4 is screened on top of a building footing with an associated footing drain. It appears that fluctuations in groundwater flow around the footing and to the drain result in periodic groundwater contact with residual TPH mass and observed periodic increases in TPH concentrations.

4.3 TSA Groundwater Quality Monitoring

Per the Consent Order, the potential for downward migration of VOCs from the TGA to the Upper TSA was monitored by collecting groundwater quality data at six Upper TSA wells [BOP-22R(ds), BOP-60R(ds), BOP-61(ds), BOP 62(ds), BOP 65(ds), and BOP-66(ds)]. The Upper TSA VOC analytical results from this reporting period are presented by respective area in Table 4-2 and the TCE concentrations are shown on Figure 4-3. TCE concentrations at the six Upper TSA wells were either below the laboratory reporting limit or below the MCL with the exception of BOP-61(ds), which is located in the East Yard CAA. TCE concentrations at BOP-61(ds) ranged from 5.8 to 7.6 µg/L in 2016 and have fluctuated near the MCL for the past 3 to 5 years. TGA wells in the direct vicinity of

BOP-61(ds) include E-9 and BOP 48(i), where TCE results are near the laboratory reporting limit and do not indicate a TGA source for the observed concentrations in the Upper TSA well. TSA extraction well EW-23, located 330 ft northeast of BOP 61(ds), is operated to capture and remediate groundwater in the vicinity of BOP-61(ds) as part of the East Multnomah County (EMC) Cleanup project.

4.4 Former Vapor Degreaser Source Area-Vapor Data

The SVE system has been operating in the Former Vapor Degreaser Source Area since 2012 with some periods of shut down, as described in Section 3.2 of this report. VOCs concentrations were reported in two vadose zones (sub-slab and at-depth). Sub-slab vapor VOCs concentrations are monitored at nine vapor pin locations (VP-1 through VP-9), while at-depth vapor sample are collected from the vadose zone screen in the seven multiple-purpose wells [BOP-78(i), BOP-79(i) and BOP-84(i) though BOP-88(i)] and three VOWs (VOW-16 through VOW-18). Sub-slab vapor sample results for 2016 are summarized in Table 4-4 and TCE concentrations are shown on Figure 4-6. At-depth vapor COPC concentrations for 2016 are summarized in Table 4-5 and TCE concentrations are shown on Figure 4-7.

Sub-slab vapor samples have been collected quarterly from nine vapor pins since monitoring began in May 2013. Sub-slab vapor results for 2016 indicate all COPC concentrations were below screening levels, with the exception of TCE. TCE vapor concentrations exceeded the screening level (2,900 µg/m^3) at VP-2 (150,000 µg/m^3) and VP-5 (93,000 µg/m^3) in February 2016. These concentrations are much lower than baseline concentrations, which are presented on Table 4-4. It should be noted that the two 2016 exceedances of the TCE screening level occurred when the SVE system was in pulse-pump shutdown mode. The SVE system resumed full-time operation on April 7, 2016. Since that time, TCE concentrations have been below the screening level at all sub-slab vapor pins locations with a maximum TCE concentration of 220 µg/m^3).

At-depth vapor samples have been collected quarterly from seven multiple purpose wells since SVE system startup in September 2012. In 2016, all the COPCs were reported at concentration either below the laboratory reporting limit or below the respective screening levels.

4.5 Treatment System Performance Data

The GWTS and the SVE system are the two systems currently operating to remediate the TGA. This section of the report will focus on performance data for each system.

4.5.1 Groundwater Treatment System

The GWTS monitoring data includes VOC analytical data and flow rate data collected from each TGA extraction well. Active extraction wells were sampled on a quarterly basis with monthly water level measurements, while extraction wells in shutdown mode were sampled annually with quarterly water level measurements, as summarized in the Performance Monitoring Plan (Table 3-2). These data are presented and evaluated for each well in terms of an average daily mass removal rate in pounds of VOCs per day (lbs/day), total mass of selected VOCs removed (lbs), and total gallons extracted.

4.5.1.1 VOC Mass Removed

The performance of the GWTS focuses on the ability of individual extraction wells to achieve one or more of the following CAOs: 1) hydraulic containment of the VOC plume (CAO-a and CAO-d); 2) VOC mass removal (CAO-a); and 3) water table depression, which is intended to enhance the VOC mass removal rate from SVE wells (CAO-a). The 0.01 lb/day VOC mass removal criterion established for the Central CAA dual-phase extraction system (LAI 2001) is used as a benchmark criteria for potential discontinuation of pumping for the GWTS extraction wells. Currently, six extraction wells are operated continuously (E-4, E-12, E-13, E-15, E-16, and DP-1). Extraction wells E-5 through E-9 and E-11 are shut down due to low mass removal rates and are used for groundwater monitoring only. Extraction E-2 and E-3 are currently in shutdown mode based on consistent COPCs concentrations below the respective MCLs and to minimize bioaccumulation related to the upgradient treatment zone for the Former Vapor Degreaser Source Area bioremediation area.

In 2016, the average VOC mass removal rates for the six operating extraction wells ranged from 0.00012 (E-15) to 0.01156 (E-13) lb/day. Combined, the six extraction wells have an average VOC mass removal rate of 0.01636 lb/day. This information is presented in Table 5-1 along with data from the prior 5 years for comparison. In 2016, a total of 6 pounds of VOCs were removed and a total of 37 million gallons of groundwater was extracted. The average total VOC mass removal rates for 2016 are shown on Figure 5-1. Table 5-2 summarizes average pumping rates for each well during 2016. Total TCE, TCA, cDCE, and total VOC mass removed in 2016 in each area is shown on Figure 5-2.

Since the start of GWTS operation in 1983, a total of 4,301 pounds of VOC mass has been removed and 4,558 million gallons of water extracted. All time total VOC mass removed is summarized for each well and area on Figure 5-3. Figure 5-4 presents cumulative groundwater system performance.

The individual extraction well VOC mass removal rates (Table 5-1) are below the 0.01 lb/day VOC mass removal criterion, with the exception of E-13. The GWTS and the individual extraction wells were historically operated with the main goal of removing and, although the extraction system still removes mass, the focus has shifted from mass removal to maintaining hydraulic capture. Extraction wells continue to be operated to provide hydraulic capture and to operate in conjunction with the bioremediation additional corrective action in the source areas.

4.5.1.2 Groundwater Treatment System Discharge Monitoring

In compliance with National Pollutant Discharge Elimination System permit (NPDES Permit Number 101761) for the GWTS treated water discharge to the Columbia Slough, quarterly samples of the GWTS influent and effluent were collected and submitted for chemical analysis. The NPDES permit effluent water quality requirements and the analytical results for the reporting period are summarized in Table 5-3. NPDES permit requirements for the effluent were not exceeded during 2016.

4.5.2 Soil Vapor Extraction System

The SVE system, located in the Former Vapor Degreaser Source Area, was installed in 2012. The system operated full time until July 2014 at which time the system operated in a pulse-pump cycle schedule based on the quarterly vapor analytical data. However, since April 7, 2016, the SVE system has remained in full-time operation. Analytical results indicate that sub-slab vapor concentrations rebound to levels above the screening levels when the system is not operating. During non-operational cycles of the SVE system, TCE concentrations rebounded in the sub-slab interval as high as 260,000 µg/m^3 (sampling location VP-5 in November 2014) and 180,000 µg/m^3 (sampling location VP-2 in November 2014). Sampling locations VP-2 and VP-5 historically have been most sensitive to shutdown of the SVE system, as TCE concentrations have not rebounded in the other sub-slab sampling locations. Based on the observed rebound, the pulse-pump cycling of the SVE system was discontinued and the system started full-time operation in April 2016. The current TCE risk-based cleanup level (RBC) for sub-slab soil vapor is 2,900 µg/m^3. This is based on the RBC for indoor air in an industrial setting (2.9 µg/m^3) and an indoor attenuation factor of 1,000 that accounts for vapor intrusion through the building slab. Recently, ODEQ also adopted an Indoor Air Response Action Level for short-term exposure to TCE of 7 to 8 µg/m^3. With the continued operation of the SVE system, the sub-slab vapor concentrations are below the newly adopted short-term exposure limits; therefore, the SVE system will continue to operate until concentrations are reduced.

SVE system mass removal rates were calculated for the seven multiple-purpose wells. These wells [BOP-78(i), BOP-79(i), and BOP-84(i) through BOP-88(i)] are screened in both the vadose zone for SVE operation and in the saturated zone for bioremediation injection/monitoring. During 2016, VOC mass removal rates ranged from 0.00031 lbs/day [at BOP-79(i)] to 0.00373 lbs/day [at BOP-84(i)], as summarized in Table 4-5; calculation of these mass removal rates does not include days when the system was shut down. A total of 2.05 lbs of VOC mass were removed from the vadose zone in 2016 and a cumulative total of 12.52 lbs of VOC mass removed since SVE system startup.

5.0 SOURCE AREA REMEDIATION PROGRESS

A primary source of TCE groundwater contamination in the TGA is the Former Vapor Degreaser Source Area where aquifer bioremediation has been performed. Aquifer bioremediation consists of the PRB created through electron donor injection to well BOP-74(i) on the downgradient edge of the source area, and source area treatment resulting from donor injection to the seven multiple-purpose wells [BOP-78(i), BOP-79(i), and BOP-84(i) through BOP-88(i)]. PRB injections occurred in 2011, 2012, 2014, and 2015. Injection of the seven multiple-purpose wells was performed in 2013, 2014, and 2015 (concurrent with the PRB injection). Well locations and ROIs are shown on Figures 6-1 and 6-2.

The PRB injections and multiple-purpose source area well injections have created a commingled treatment zone with overlapping ROI of injected donor and downgradient transport of donor by groundwater flow. The initial PRB injection (2011) resulted in an estimated 40 ft ROI; however, the ROI has increased to about 68 ft with the larger volumes delivered to well BOP-74(i) during subsequent injections. The ROI of each multiple-purpose well is 10 to 15 ft based on injection volumes and observations at non-injected wells BOP-72(i) and BOP-76(i). The combined area of overlapping ROI from the different injection wells is approximately 130 ft wide (north to south) and 150 to 160 ft thick (east to west) surrounding the former vapor degreasers. Over time, the treatment zone has extended farther downgradient to include wells BOP-80(i), BOP-81(i), and BOP-82(i). The extent of the treatment zone is based on the presence of injected donor (increased TOC); changing concentrations of TCE and breakdown products; and enhanced aquifer redox conditions for bioremediation (indicated by increased ferrous iron, sulfide, and methane, and by decreasing concentrations of nitrate and sulfate). Overlapping ROI and the downgradient extent of the treatment zone are shown on Figures 6-1 and 6-2. At monitoring well BOP-83(i), the northernmost in the line of downgradient monitoring wells, TOC and redox changes have not been observed, but TCE concentrations have decreased substantially from a baseline of 31 µg/L to as low as 1.7 µg/L in February 2016; this well is considered to be outside of the treatment zone, but within an area of concentration reduction resulting from donor injections.

The progress of the bioremediation remedy in the Former Vapor Degreaser Source Area is primarily demonstrated by the decrease in TCE concentrations and the increase in breakdown products (cDCE and VC) and in non-toxic end products ethene and ethane. These changes coincide with increased TOC and enhanced aquifer redox conditions indicative of the treatment zone. Cumulative bioremediation monitoring data for the Former Vapor Degreaser Source Area are summarized in Table 6-1. The following highlights observations of enhanced biodegradation in the source area and downgradient treatment zone through 2016:

- Initially, reported TCE concentrations in the source area were relatively low with concentrations ranging from nondetect at the reporting limit to 110 µg/L. However, following donor injections, TCE began to desorb from the aquifer soil, increasing the concentration in the aqueous phase. This resulted in increased concentrations of TCE to a maximum concentration 17,000 µg/L at well BOP-73(i). From the baseline sampling event in October 2010 through 2016, all of the

source area wells and three of the four downgradient wells have had maximum TCE concentrations above the cleanup level, as shown on Figure 6-1. Enhanced desorption is desired as it liberates mass from the sorbed phase to the aqueous phase where it can be treated *in situ* or extracted for treatment by the GWTS.

- TCE concentrations have decreased substantially due to donor injections. As of November 2016, results indicate only three source area wells with TCE above the MCL [6.2 µg/L at BOP-75(i) and BOP-88(i); and 6.7 µg/L at BOP-72(i)] along with two downgradient wells [8.7 µg/L at BOP-82(i) and 10.0 µg/L at BOP-83(i)], as shown on Figure 6-2. The decrease in TCE concentration at well BOP-73(i) from the maximum of 17,000 µg/L to 1.5 µg/L in November 2016 constitutes a 99.99% decrease.

- The predominant COPC at the 17 wells (source area and downgradient wells) has transitioned over time from the parent product (TCE) through breakdown products (cDCE and VC) to end products (ethene and ethane). This is a highly favorable result indicating progression of reductive dechlorination through breakdown products to non-toxic end products. The transition from TCE to breakdown and end products can be seen in the highlighting of the predominant ethene (i.e., compound with the highest molar fraction) in Table 6-1.

- Five source area wells [BOP-72(i), BOP-73(i), BOP-75(i), BOP-76(i), and BOP-77(i)] are utilized for monitoring purposes only and are not injected with electron donor. Data from these wells is important for understanding changes in the bulk aquifer due to donor injection at some distance from injection wells. Data from monitoring well BOP-73(i) (located 50 ft northwest of the former degreasers) is particularly helpful in understanding the progression of treatment in the source area, as the highest TCE concentrations were consistently detected at this well. BOP-73(i) is also located centrally within the extent of source area contamination and centrally to the injected multiple-purpose wells. Some observations at BOP-73(i) are as follows:

    - Enhanced desorption has peaked as evidenced by the drop in TCE and breakdown product concentrations in 2015 and 2016. In late 2013 and early 2014, peak concentrations of TCE (17,000 µg/L), cDCE (7,800), and VC (13,000) were observed that were 2 orders of magnitude higher than the baseline concentrations reported prior to donor injections. Drastic decreases were observed in May 2016 data as TCE, cDCE, and VC were all below the laboratory reporting limit. TCE concentrations were below the MCL during all of 2016. Enhanced desorption and the progression of TCE reductive dechlorination through breakdown products to end products continues to be evident on a time versus concentration plot for BOP-73(i) groundwater presented on Figure 6-3. Several peaks in TCE concentration show enhanced desorption effects following injection events. TCE then declines, followed by sequential peaks in cDCE, VC, and ethene+ethane concentrations.

    - TCE predominance on a molar basis (evaluated by molar fraction) has transitioned to cDCE, VC, and end product ethane predominance. The non-toxic end product ethene, which was not detected during baseline sampling, increased to a maximum of 77 µg/L at BOP-73(i) in February 2016. Ethene+ethane was predominant over TCE and breakdown products in November 2016 with a molar fraction of 0.90 (i.e., 90 percent of total ethenes), as shown in Table 6-1.

- Complete reductive dechlorination of TCE and breakdown products with substantial conversion of chlorinated compounds to non-toxic end products has occurred throughout the extent of the treatment zone (Figure 6-1). The average molar fraction for each compound (PCE, TCE, cDCE, VC,

and ethene+ethane) was calculated for each sampling event by averaging the data from every well in the treatment zone where VOC plus ethene/ethane data was collected. Figure 6-4 shows the average molar fraction distribution for each sampling event. The initial predominance of TCE (i.e., largest molar fraction) is apparent through August 2013. cDCE becomes predominant by February 2014, followed by VC predominance in August 2014. The non-toxic end products ethene+ethane have been predominant within the extent of the treatment zone since February 2015.

- Complete reductive dechlorination of TCE and breakdown products to ethene and ethane has resulted in contaminated mass destruction, not just conversion of PCE and TCE to chlorinated breakdown products. A plot of average total chlorinated ethenes (molar sum of PCE+TCE+cDCE+VC) is presented on Figure 6-4. The average total chlorinated ethenes was calculated for each monitoring event and includes all wells within the treatment zone. Increasing average total chlorinated ethenes in February and August 2014 reflects substantial desorption in the vicinity of BOP-73(i), followed by a continued decrease through 2016. Comparison of the peak average total chlorinated ethenes in August 2014 (39.6 µmoles/L) to the minimum in August 2016 (0.2 µmoles/L) represents a 99.5 percent decrease within the source and downgradient treatment zone.

5.1 Progress toward corrective action objectives

Based on the treatment system data (GWTS and SVE), along with analytical performance data results (groundwater and vapor), progress toward achieving the corrective action objections is estimated within the 10 to 15 year time frame. This section summarizes the progress made toward achieving CAO-a through CAO-g (Section 2.1.1), based on the data and evaluations discussed in this report.

5.1.1 CAO-a

"Decrease VOC concentrations (i.e., mass removal) throughout the site to achieve maximum contaminant levels (MCLs). If this is not feasible, then minimize the areal extent of groundwater contamination that exceeds MCLs and provide long-term containment for those areas with concentrations above MCLs."

Groundwater quality results indicate that TGA groundwater is responding to the Consent Order-driven correction measures and the additional corrective action measures (i.e., bioremediation and SVE operation in identified source areas). Some areas have been more resistant to remediation efforts; these include the area near well BOP-9(i) and BOP-10(i), which are located in the Southwest and Central CAAs, respectively. TCE concentrations have reduced at these two areas from the maximum concentration; however, the decrease is slow.

5.1.2 CAO-b

"Prevent exposure to TGA groundwater that contains VOCs at concentrations above MCLs."

This CAO is currently being achieved through historical decommissioning of water supply wells within the VOC plume, provision of alternate water supplies, and general monitoring of the area with respect to controlling the installation of new wells and the implementation of the requirements within the ICP. Investigations conducted within the West, Central, Southwest, East, and East Yard Source Areas

indicate COPCs are not present in the shallow soil or vapor concentrations above the screening limits; therefore, ODEQ has approved the removal of these areas from the ICP.

5.1.3 CAO-c

"Protect environmental receptors by preventing discharge of TGA groundwater to surface water at VOC contaminant concentrations that may exceed ambient water quality criteria."

Evaluations conducted in the health and environmental assessment (LAI 1995b) indicate no potential impact to human health or environmental receptors in the Columbia Slough from groundwater or soil contamination. As a result, CAO-c has been achieved through implementation of the corrective measures.

5.1.4 CAO-d

"Prevent further spread of contamination in the TGA (i.e., prevent the migration of groundwater containing VOCs above MCLs)."

Groundwater elevation and contaminant concentration data collected during this reporting period indicate continued hydraulic capture of the plume. The progress of the remedy and prevention of further spread of the contamination is summarized in the plume progress map, shown on Figure 6-5. This CAO, therefore, continues to be achieved through implementation of the corrective measures.

5.1.5 CAO-e

"Protect groundwater quality in the Troutdale Sandstone Aquifer (TSA)."

Groundwater quality data for wells used to assess the potential effect of TGA groundwater on the TSA indicate that the TGA does not appear to be a continuing source of VOCs to the TSA. Decreasing VOC concentration trends have been observed over the long-term at the TSA wells. Based on these assessments, the corrective measures are currently achieving CAO-e.

5.1.6 CAO-f

"Facilitate existing uses of groundwater resources in eastern Multnomah County".

The ICP provides protective measures to restrict the potential ingestion of TGA groundwater by decommissioning existing groundwater supply wells and placement of restrictions on future well installation activities. The ICP is provided in Appendix B.

5.1.7 CAO-g

"Reduce concentrations of VOCs and minimize migration of VOCs from vadose zone soil to the TGA that could compromise satisfying objective "a" for groundwater."

This CAO has been achieved through the removal of 3,700 lbs of VOCs during operation of the SVE wells in the West and Central Corrective Action Areas prior to the shutdown of the SVE system. The SVE system was modified and installed within the Former Vapor Degreaser Source Area in 2012. Since SVE startup in the source area, a total of 12.52 lbs of VOCs has been removed.

6.0 RECOMMENDATIONS

This section provides recommendations for modifications to enhance and optimize the Consent Order corrective measures and the additional corrective measures utilized to conduct the TGA remedy.

6.1 Groundwater Extraction and Treatment Program

The VOC mass removed has appeared to have reached an asymptotic level relative to the first 15 years of groundwater treatment as shown on Figure 5-4. Over the past few years, the benefit of operating the GWTS has shifted more from providing VOC mass removal to providing hydraulic control of the dissolved plume. As the additional corrective measures continue to remove mass (i.e., SVE system in the vadose zone and enhanced in situ bioremediation in groundwater), the continued operation of individual extraction wells for the GWTS may be modified.

The continued operation of the GWTS is recommended to: 1) provide hydraulic control of the dissolved VOC plume and 2) provide VOC mass removal. The optimization of this Consent Order corrective measure will be reviewed monthly to verify individual extraction well pump rates and system compliance with the NPDES permit requirements. Continued operation of currently operating extraction wells (E-4, E-12, E-13, E-15, E-16, and DP-1) is recommended. Continued shutdown of extraction wells E-2, E-3, and E-11 are also recommended.

6.2 Performance Monitoring Program

Given the remedy progress and the continued reduction of the dissolved VOC plume, we propose that the following changes to the performance monitoring program be implemented beginning during the next annual sampling event (August 2017). The requested modifications are included in Table 3-2 and discussed below:

Extraction Well Monitoring

- Continue collection of water level measurements on a quarterly basis for actively operational extraction wells (E-4, E-12, E-13, E-15, E-16, and DP-1) and semiannually for remaining extraction wells that are shut down.
- Continue collection of water quality data on a quarterly basis for actively operational extraction wells, semiannually for conditionally shutdown extraction wells (E-2, E-3, and E-11), and annually for shutdown extraction wells that are being monitored for water quality only (E-5 through E-9).

Groundwater Monitoring Wells

We propose to maintain the current monitoring program for all groundwater monitoring exceptions noted below and summarized in Table 3-2:

- Monitoring well BOP-7(d), newly installed in 2016, will be sampled on a quarterly basis using multiple DBS at two intervals within the screened section. An upper DBS will be installed in the upper 5 ft of the screen and the second bag will be installed in the lower 5 ft of the screen. The multiple DBS data will be utilized to evaluate potential vertical variations in the COPC

concentrations. Based on four quarters of multiple DBS data, the interval with the highest TCE concentrations will be selected for future sampling using a single DBS.

- Both BOP-7(i) and BOP-57(ib) are partially screened in the first siltstone layer of the confining layer separating the TGA from the TSA. Groundwater quality from the wells does not characterize the TGA; however, the data does provide information on potential downward migration. We propose these wells be monitored (groundwater elevation and quality sampling) on an annual basis. This is a change from prior quarterly [BOP-7(i)] and semiannual [BOP-57(ib)] sampling.
- We recommend decreasing the groundwater quality and the at-depth vapor sampling frequency from quarterly to semiannual for the 17 wells associated with the Former Vapor Degreaser Source Area. The groundwater quality samples will continue to provide information on the enhance dechlorination progress and be utilized when evaluating when COPC concentrations rebound or when additional donor may be required. The at-depth vapor samples have consistently been below the screening level since November 2012. Vapor rebound has been observed in the sub-slab interval, but not in the at-depth interval. The SVE system will continue to operate to capture vadose zone vapor mass.
- Groundwater monitoring well D-13(i), located north of NE Sandy Boulevard, was removed from the monitoring program in 2009 due to COPC concentrations being below the respective MCLs. TCE concentrations have been below the MCL since August 1994 and consistently below the laboratory reporting limit since August 2001 (Appendix D). Based on this information, we recommend D-13(i) be decommissioned. A pending work plan with the process and procedures will be submitted to ODEQ.

6.3 Enhanced *In Situ* Bioremediation

The continued implementation of enhanced in situ bioremediation as an additional corrective measure is recommended. The use of bioremediation in additional areas of the site with persistent issues will be reviewed during routine remedy optimization evaluations. Following are recommendations for each of the areas on the site currently utilizing this additional corrective measure:

- Coolant Release Area: An additional injection of aerobic donor material (i.e., EHC-O™) is recommended to assist with Total TPH-Dx rebound observed at monitoring well LAI-4. We plan to conduct the injection event in May to June 2017, pending ODEQ approval of the submitted work plan (LAI 2017).
- Former Vapor Degreaser Source Area: Ongoing periodic injections of donor substrates to maintain adequate electron donor and the required reduced aquifer redox conditions for continued treatment of TCE and breakdown products are anticipated. The initial annual frequency of injection has been reduced based on monitoring results indicating effective contaminant treatment and aquifer conditions that remain conducive for continued biodegradation. Additional injections may be required to prevent rebound of contaminant concentrations due to expected back-diffusion of contaminant mass from the aquitard and other fine-grained zones in the TGA.

6.4 Future Reporting

As required by the ODEQ consent order, the next 5-year performance evaluation report will be conducted in 2021. Annual performance reports will continue to be prepared to summarize activities for the calendar year and provide an analysis of data collected during the reporting year and an assessment of remedy progress toward achieving cleanup goals.

7.0 USE OF THIS REPORT

This report has been prepared for the exclusive use of The Boeing Company for specific application to the Boeing Portland facility. 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.

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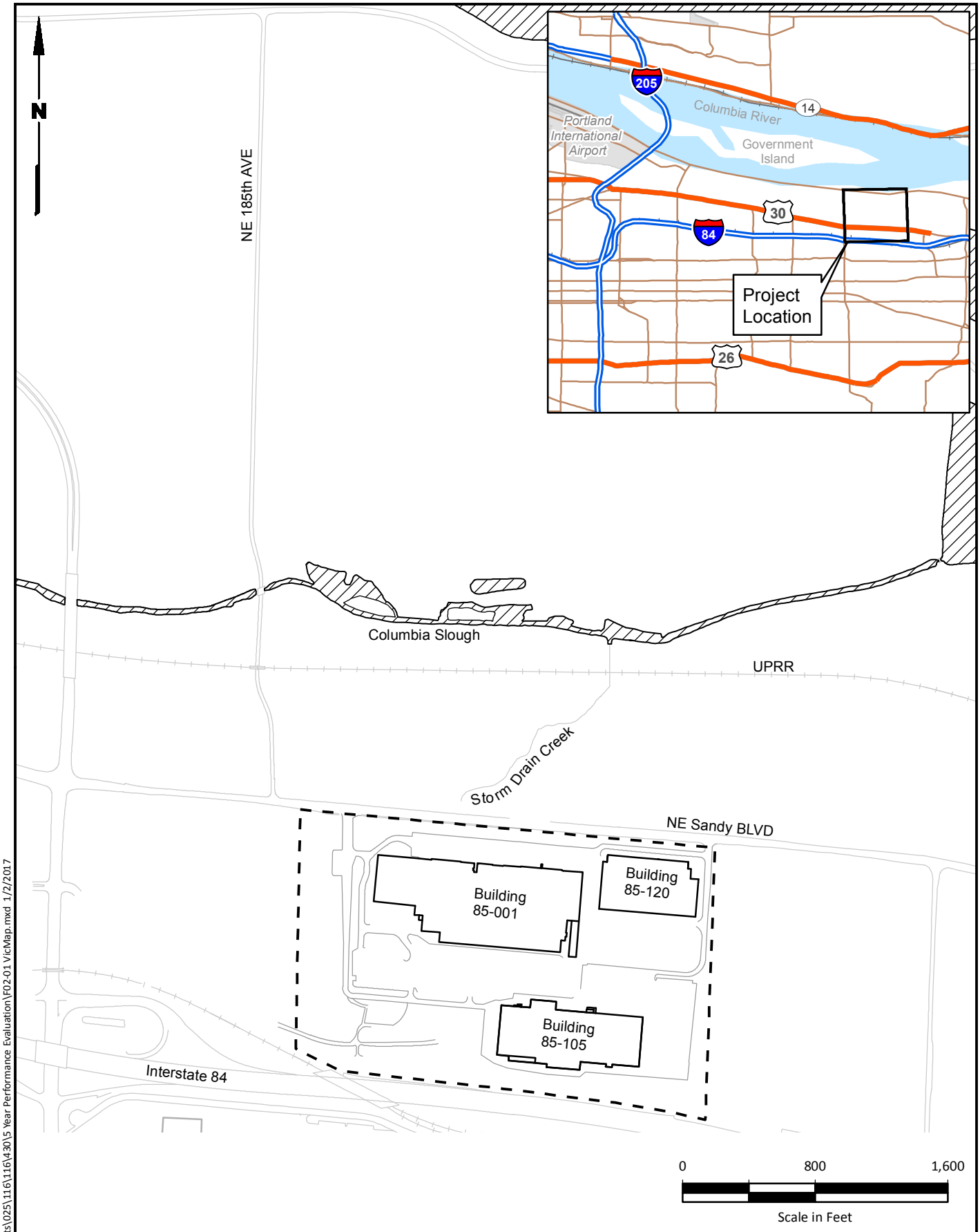
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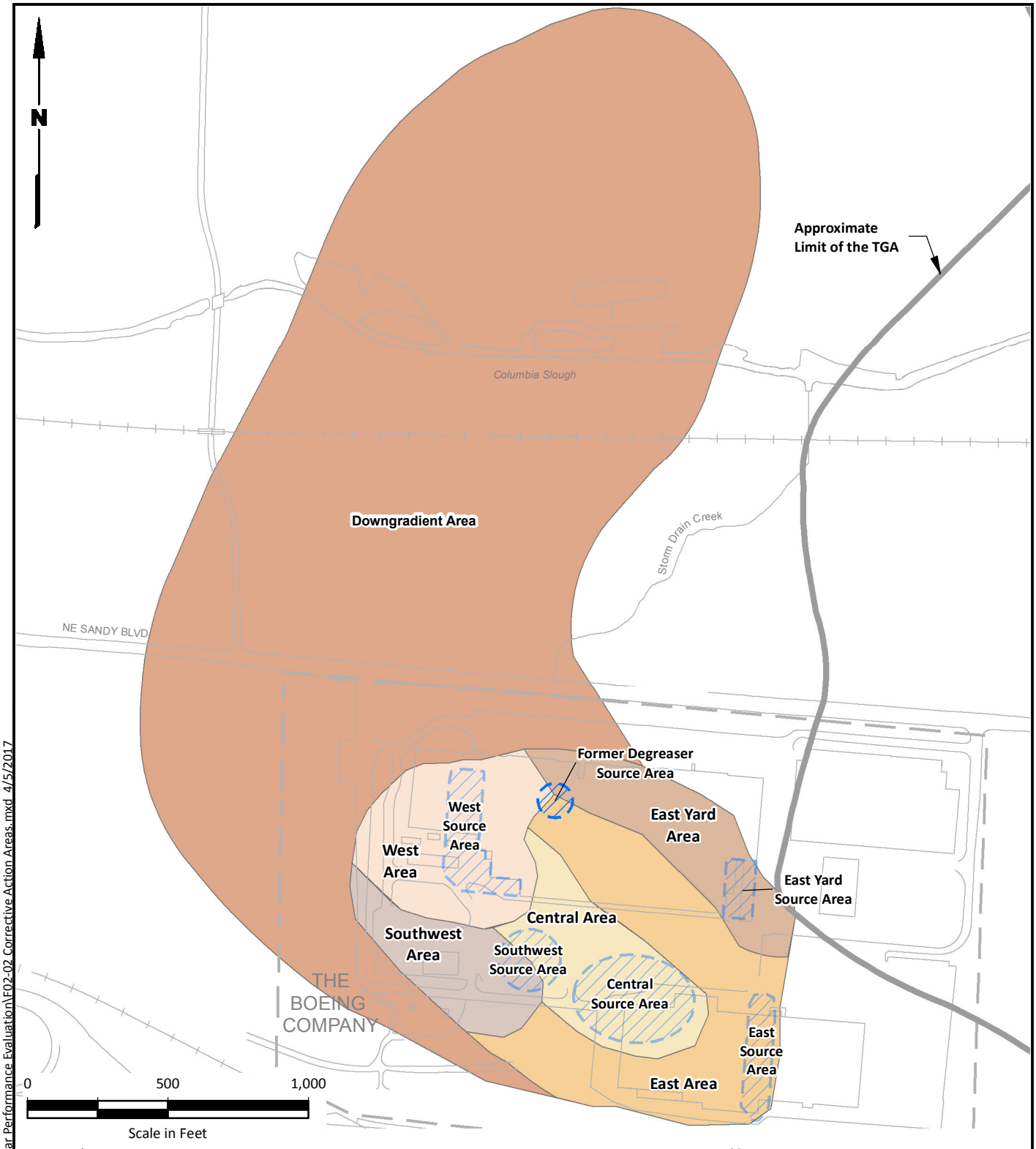
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Boeing Portland Gresham, Oregon	**Boeing Portland Site Map**	Figure 2-1



Legend

- Potential Source Area
- Source Areas Removed from the ICP Based on Investigation Results
- Central Area Soil and Groundwater
- Downgradient Area Groundwater
- East Area Soil and Groundwater
- East Yard Soil and Groundwater
- Southwest Area Soil and Groundwater
- West Area Soil and Groundwater

Notes

1. Corrective Action Areas defined in Phase 2 Corrective Measures Study (LAI 1996).
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

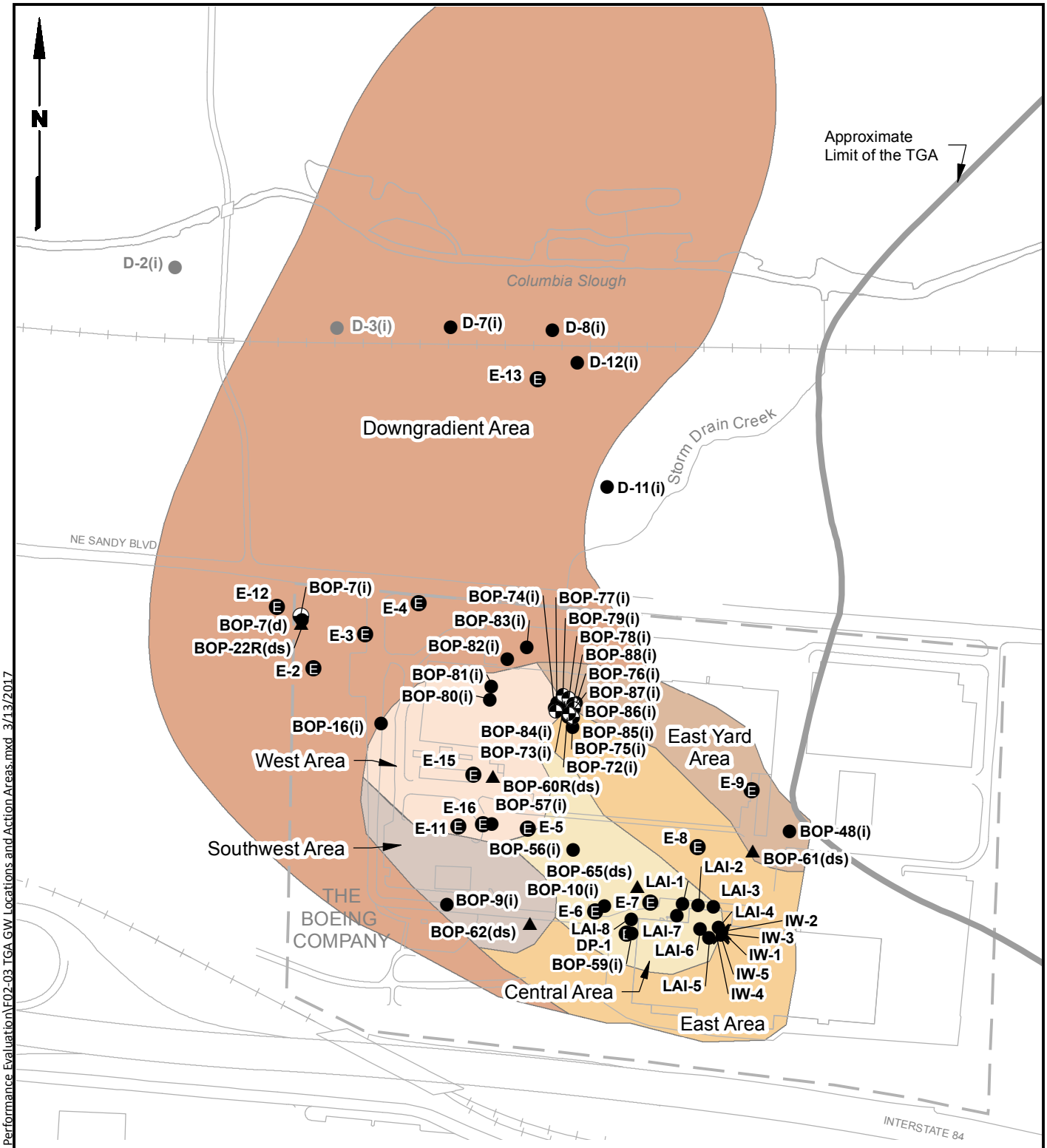
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Boeing Portland
Gresham, Oregon

Corrective Action Areas

Figure
2-2



Legend

- TGA Extraction Well
- TGA Injection Well
- TGA Monitoring Well
- TGA Multiple-Purpose Well
- TSA Monitoring Well
- Wells Screened in Lower TGA and Upper Siltstone Layer of Confining Unit. Results are not Characteristic of TGA Condition
- Wells D-2(i) and D-3(i) were Decommissioned in 2016

Note

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

0 500 1,000

Scale in Feet

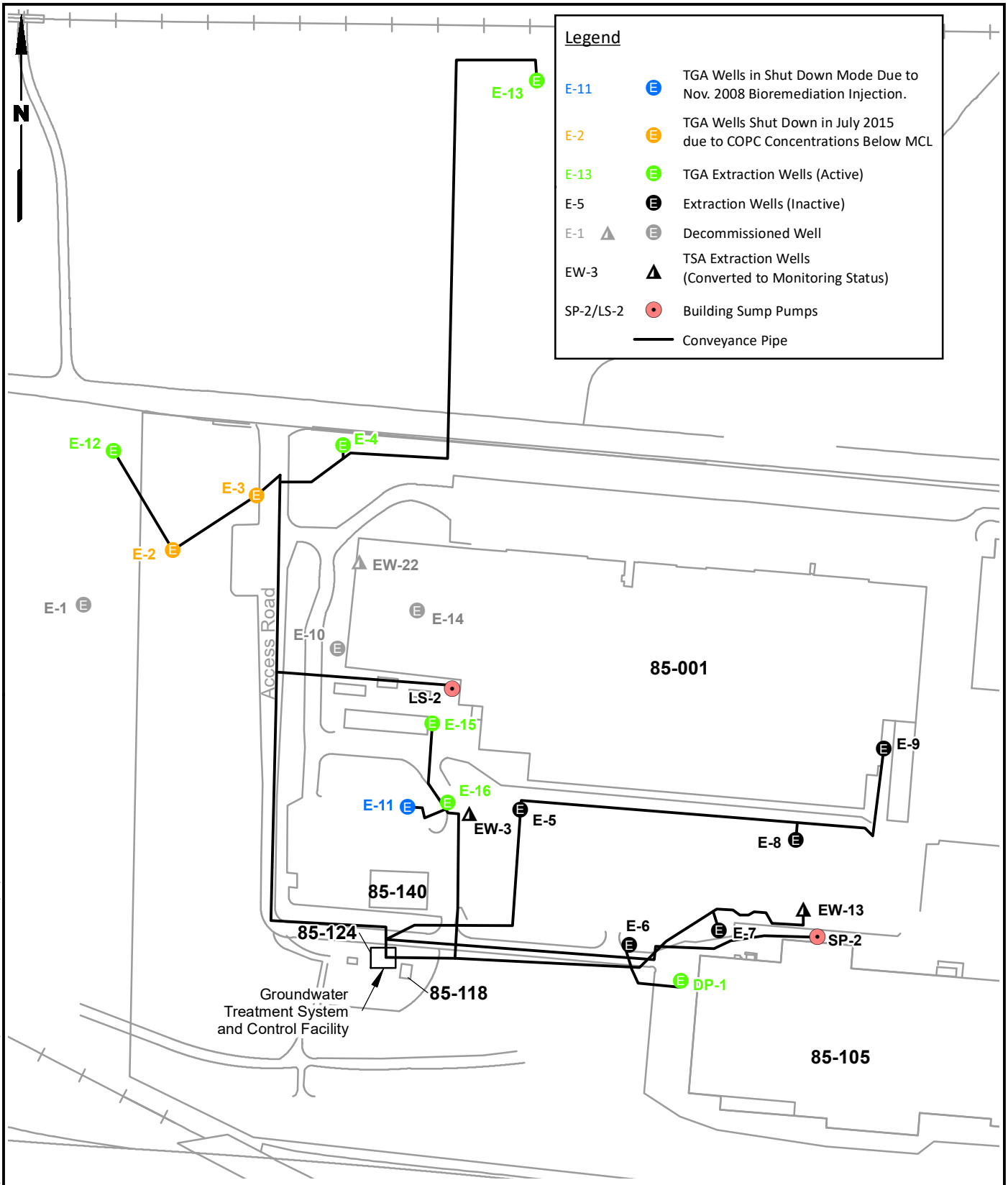
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Boeing Portland
Gresham, Oregon

TGA Groundwater Performance Monitoring Locations

Figure
2-3



Notes

1. E-1 decommissioned June 2004.
2. E-10, E-14, and EW-22 decommissoned February 2010.

0 300 600

Scale in Feet

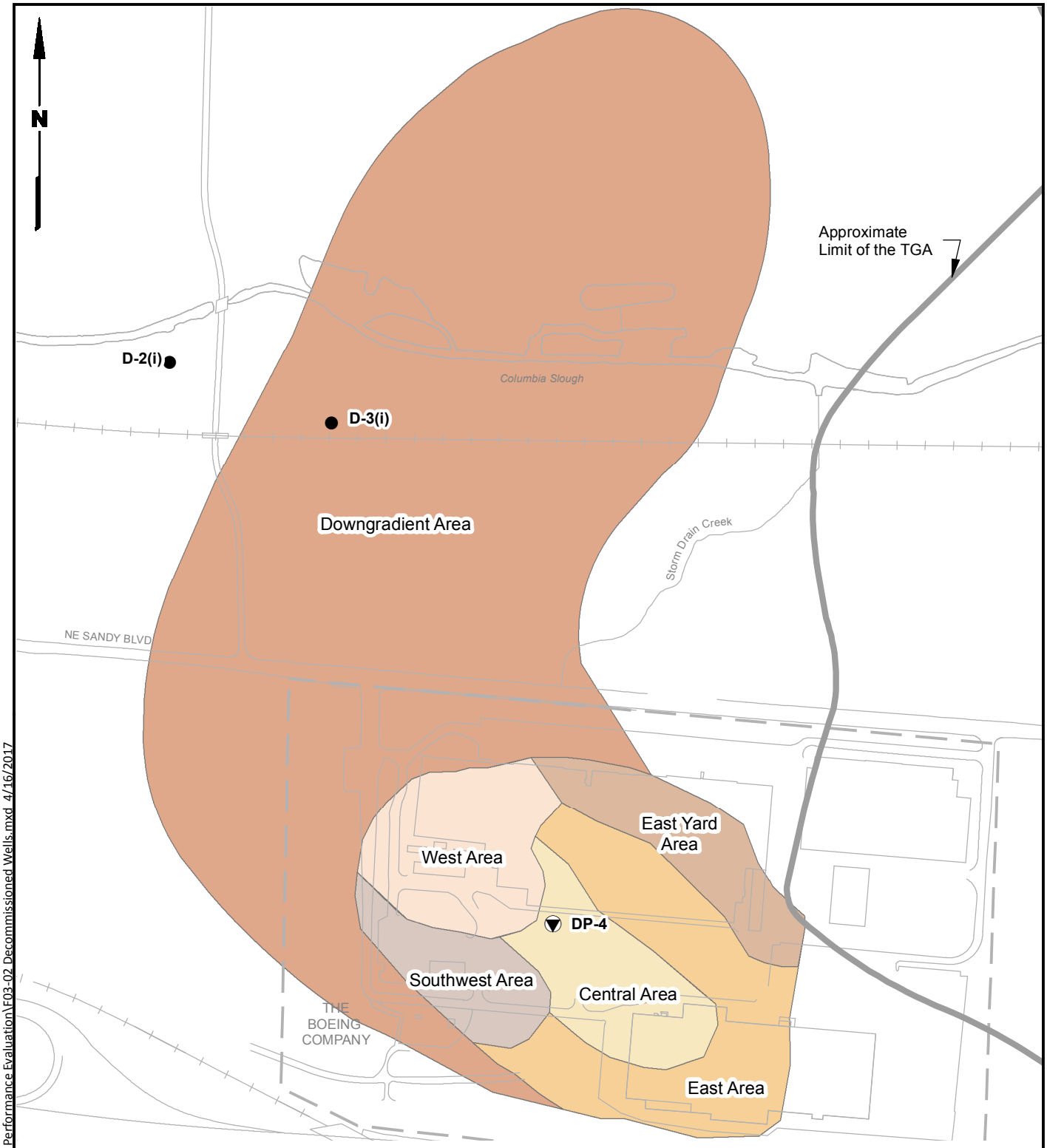
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Boeing Portland
Gresham, Oregon

Groundwater Extraction and Treatment System Configuration

Figure
3-1



Legend

- Decomissioned TGA Well
- Dual Phase Extraction Well

Note

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

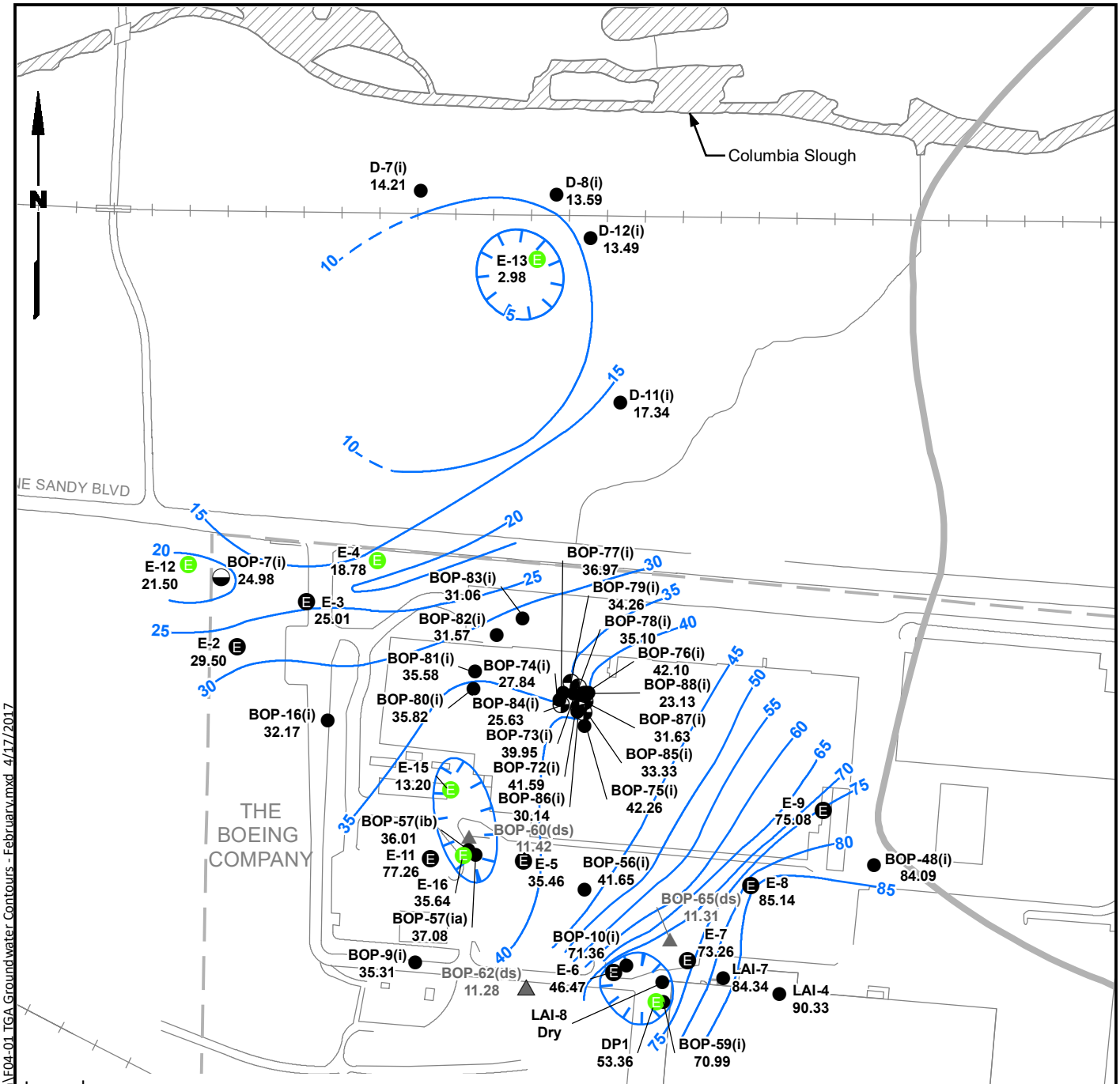
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Scale in Feet

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Boeing Portland Gresham, Oregon	**Decommissioned Well Locations and Corrective Action Areas**	Figure 3-2



Legend

E-12 21.50	Actively Operated TGA Extraction Well and Groundwater Elevation February 2016
E-2 29.50	Non-Pumping TGA Extraction Well and Groundwater Elevation February 2016
D-7(i) 14.21	TGA Monitoring Well and Groundwater Elevation February 2016
BOP-7(i) 24.98	Wells Screened in Lower TGA and Upper Siltstone Layer of Confining Unit. Results are not Characteristic of TGA Condition
BOP-60(ds) 11.42	Upper TSA Monitoring Well and Groundwater Elevation February 2016
BOP-84(i) 25.63	TGA Multiple-Purpose Wells

0 400 800

Scale in Feet

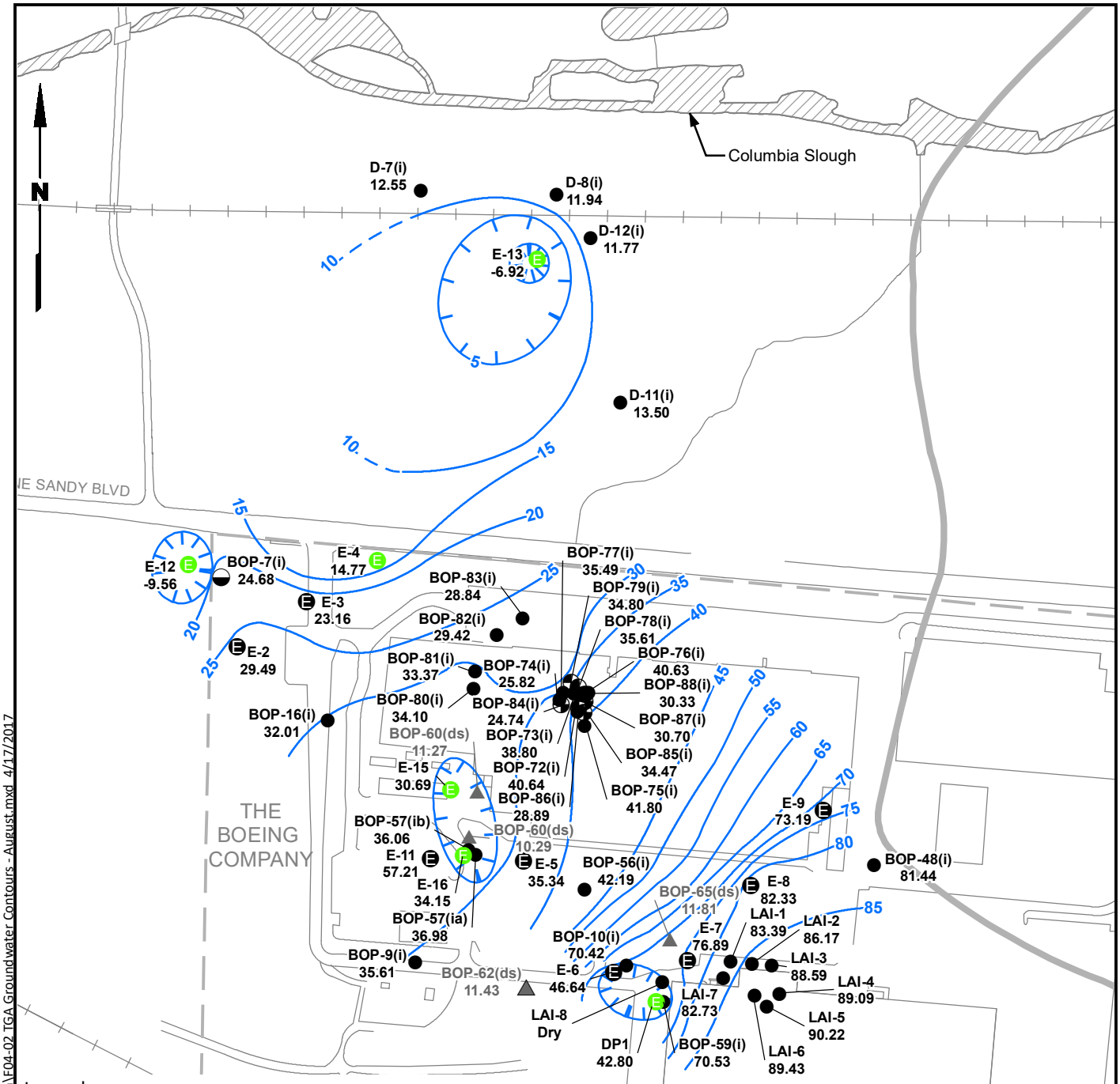
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Boeing Portland
Gresham, Oregon

TGA Groundwater Elevation Contours and Capture Zone (Wet Season) February 2016

Figure
4-1



Legend

E-12 -9.56	Actively Operated TGA Extraction Well and Groundwater Elevation August 2016
E-2 29.49	Non-Pumping TGA Extraction Well and Groundwater Elevation August 2016
D-7(i) 12.55	TGA Monitoring Well and Groundwater Elevation August 2016
BOP-7(i) 24.68	Wells Screened in Lower TGA and Upper Siltstone Layer of Confining Unit. Results are not Characteristic of TGA Condition
BOP-60(ds) 10.29	Upper TSA Monitoring Well and Groundwater Elevation August 2016
BOP-84(i) 24.74	TGA Multiple-Purpose Wells

0 400 800

Scale in Feet

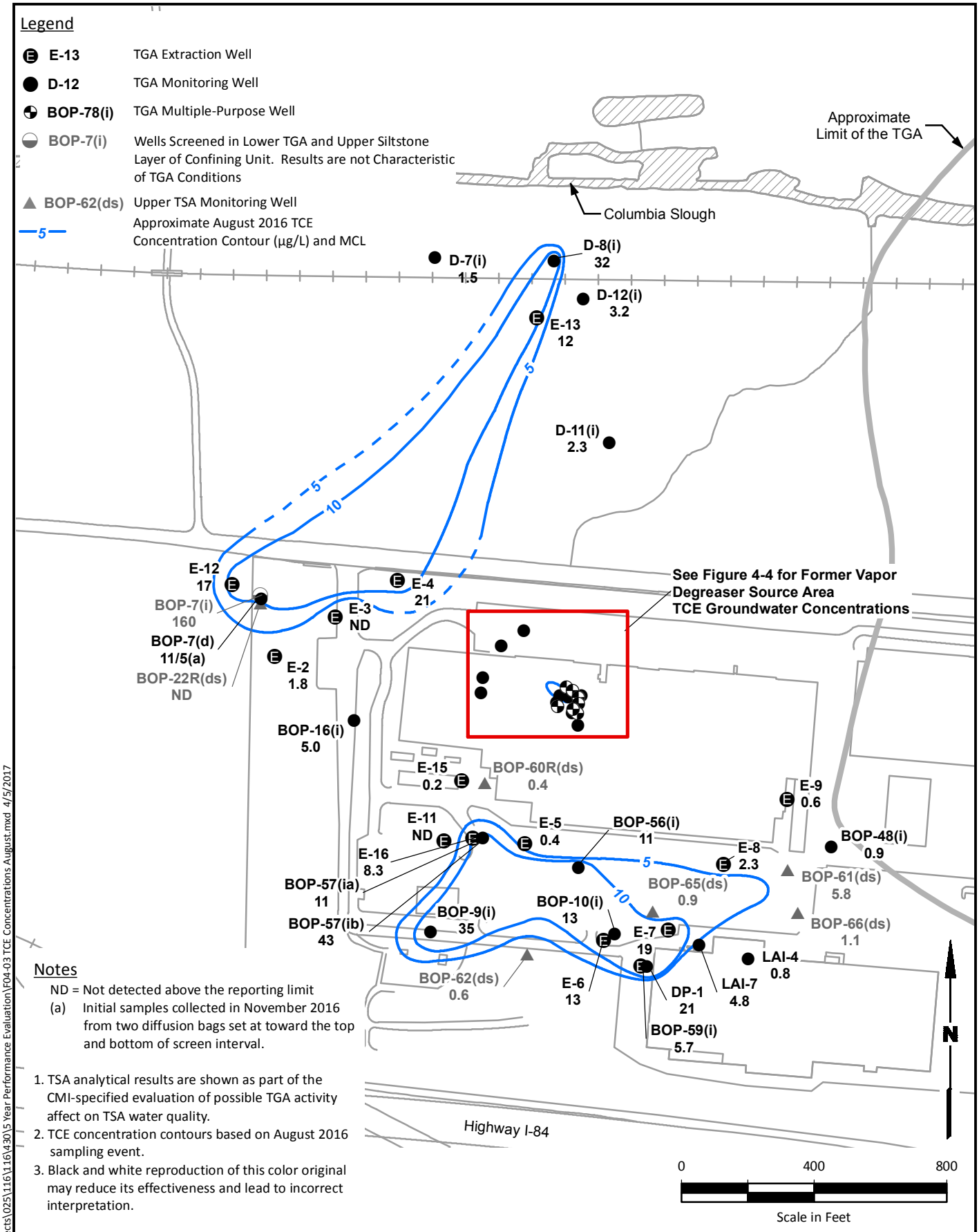
G:\Projects\025\116\116\430\5 Year Performance Evaluation\F04-02 TGA Groundwater Contours - August.mxd 4/17/2017

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Boeing Portland
Gresham, Oregon

TGA Groundwater Elevation Contours and Capture Zone (Dry Season) August 2016

Figure
4-2



Notes

ND = Not detected above the reporting limit

(a) Initial samples collected in November 2016 from two diffusion bags set at toward the top and bottom of screen interval.

1. TSA analytical results are shown as part of the CMI-specified evaluation of possible TGA activity affect on TSA water quality.
2. TCE concentration contours based on August 2016 sampling event.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

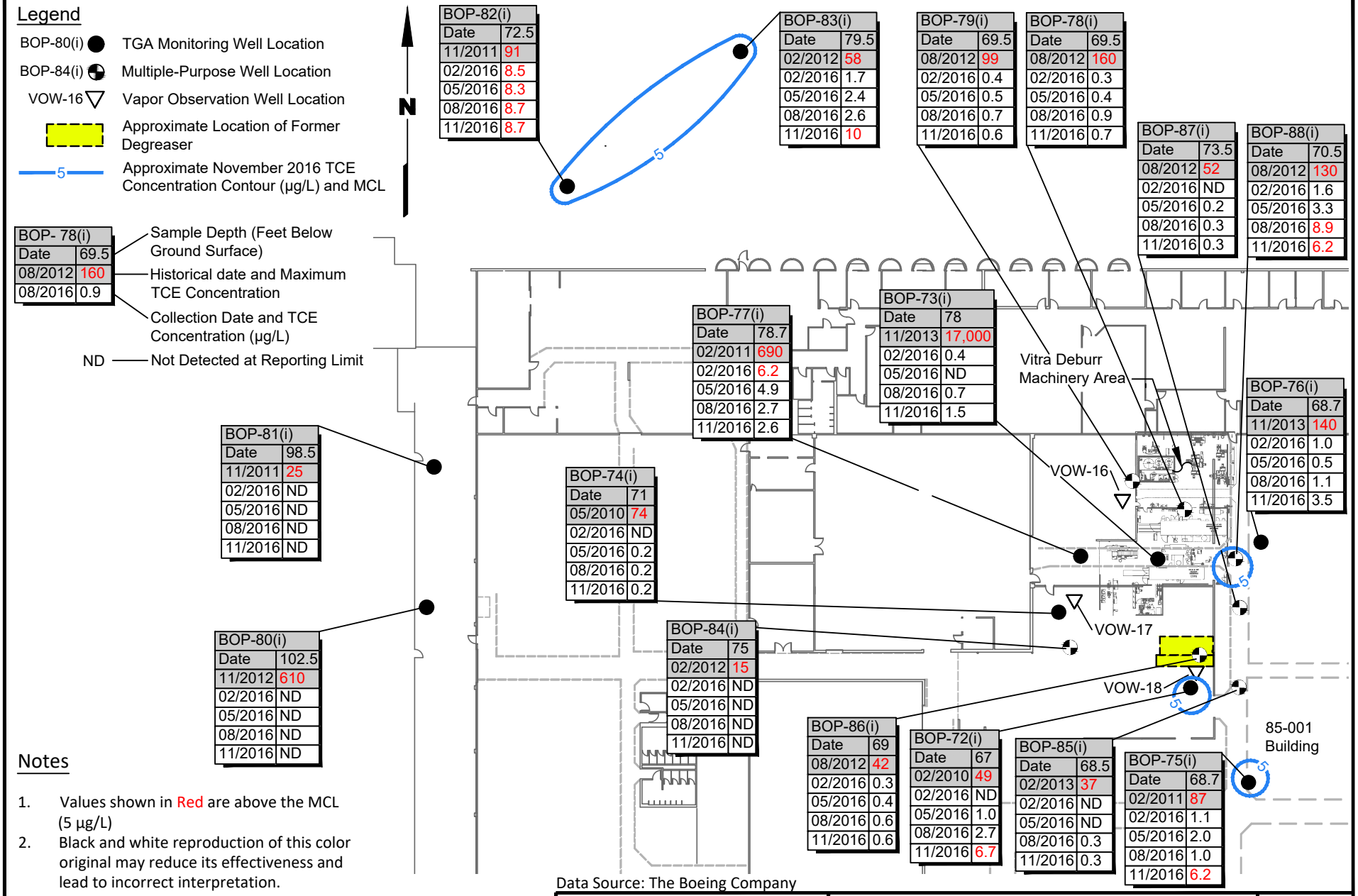
G:\Projects\025\116\116\430\5 Year Performance Evaluation\F04-03 TCE Concentrations August.mxd 4/5/2017

LANDAU ASSOCIATES

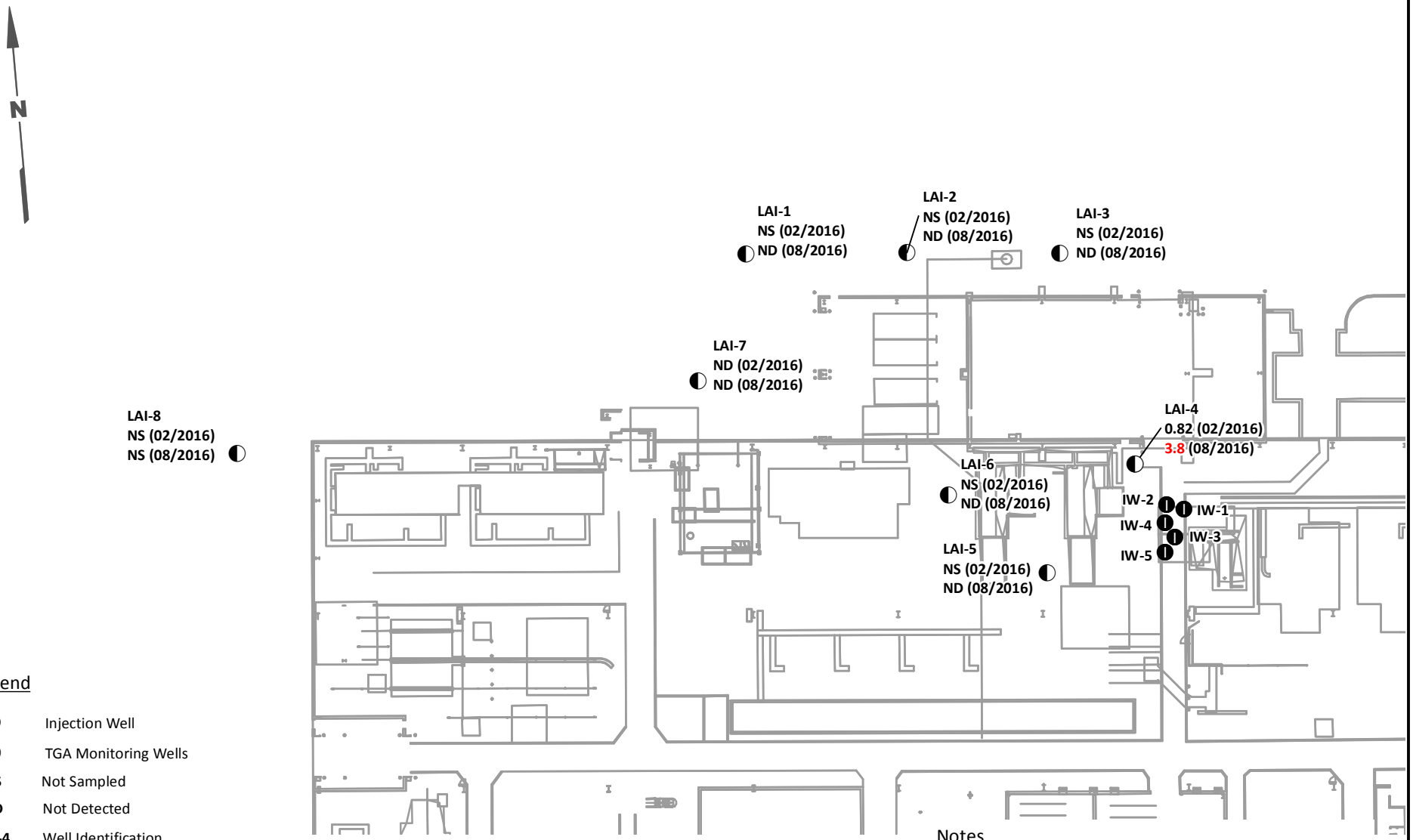
Boeing Portland
Gresham, Oregon

TCE Groundwater Results in TGA August 2016

Figure 4-3


Legend
BOP-80(i) TGA Monitoring Well Location
BOP-84(i) Multiple-Purpose Well Location
VOW-16 Vapor Observation Well Location
Approximate Location of Former Degreaser
5 Approximate November 2016 TCE Concentration Contour (µg/L) and MCL
BOP- 78(i)
Date 69.5
08/2012 160
08/2016 0.9
Sample Depth (Feet Below Ground Surface)
Historical date and Maximum TCE Concentration
Collection Date and TCE Concentration (µg/L)
ND Not Detected at Reporting Limit
N
BOP-82(i)
Date 72.5
11/2011 91
02/2016 8.5
05/2016 8.3
08/2016 8.7
11/2016 8.7
BOP-83(i)
Date 79.5
02/2012 58
02/2016 1.7
05/2016 2.4
08/2016 2.6
11/2016 10
BOP-79(i)
Date 69.5
08/2012 99
02/2016 0.4
05/2016 0.5
08/2016 0.7
11/2016 0.6
BOP-78(i)
Date 69.5
08/2012 160
02/2016 0.3
05/2016 0.4
08/2016 0.9
11/2016 0.7
BOP-87(i)
Date 73.5
08/2012 52
02/2016 ND
05/2016 0.2
08/2016 0.3
11/2016 0.3
BOP-88(i)
Date 70.5
08/2012 130
02/2016 1.6
05/2016 3.3
08/2016 8.9
11/2016 6.2
BOP-77(i)
Date 78.7
02/2011 690
02/2016 6.2
05/2016 4.9
08/2016 2.7
11/2016 2.6
BOP-73(i)
Date 78
11/2013 17,000
02/2016 0.4
05/2016 ND
08/2016 0.7
11/2016 1.5
Vitra Deburr Machinery Area
BOP-76(i)
Date 68.7
11/2013 140
02/2016 1.0
05/2016 0.5
08/2016 1.1
11/2016 3.5
BOP-81(i)
Date 98.5
11/2011 25
02/2016 ND
05/2016 ND
08/2016 ND
11/2016 ND
BOP-74(i)
Date 71
05/2010 74
02/2016 ND
05/2016 0.2
08/2016 0.2
11/2016 0.2
VOW-16
VOW-17
VOW-18
BOP-80(i)
Date 102.5
11/2012 610
02/2016 ND
05/2016 ND
08/2016 ND
11/2016 ND
BOP-84(i)
Date 75
02/2012 15
02/2016 ND
05/2016 ND
08/2016 ND
11/2016 ND
BOP-86(i)
Date 69
08/2012 42
02/2016 0.3
05/2016 0.4
08/2016 0.6
11/2016 0.6
BOP-72(i)
Date 67
02/2010 49
02/2016 ND
05/2016 1.0
08/2016 2.7
11/2016 6.7
BOP-85(i)
Date 68.5
02/2013 37
02/2016 ND
05/2016 ND
08/2016 0.3
11/2016 0.3
BOP-75(i)
Date 68.7
02/2011 87
02/2016 1.1
05/2016 2.0
08/2016 1.0
11/2016 6.2
85-001 Building
Notes
1. Values shown in Red are above the MCL (5 µg/L)
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
Data Source: The Boeing Company
0 50 100
Scale in Feet
LANDAU ASSOCIATES
Boeing Portland
Gresham, Oregon
Historical Maximum and 2016 TCE Groundwater Results Former Vapor Degreaser Source Area
Figure
4-4

G:\Projects\025\116\116\430\5 Year Performance Evaluation\F04-05 Coolant Release Results.mxd



Legend

- Injection Well
- TGA Monitoring Wells
- **NS** Not Sampled
- **ND** Not Detected
- **LAI-4** Well Identification
  - 0.82 02/2016 Total diesel- and Motor Oil-Range
  - 3.8 08/2016 Petroleum Hydrocarbons For February and August 2016 Sampling Events

Notes

1. Red values are above the site-specific cleanup level (1.35 mg/L).
2. Figure only shows west portion of building.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Adapted from: Boeing 2006

0 50 100

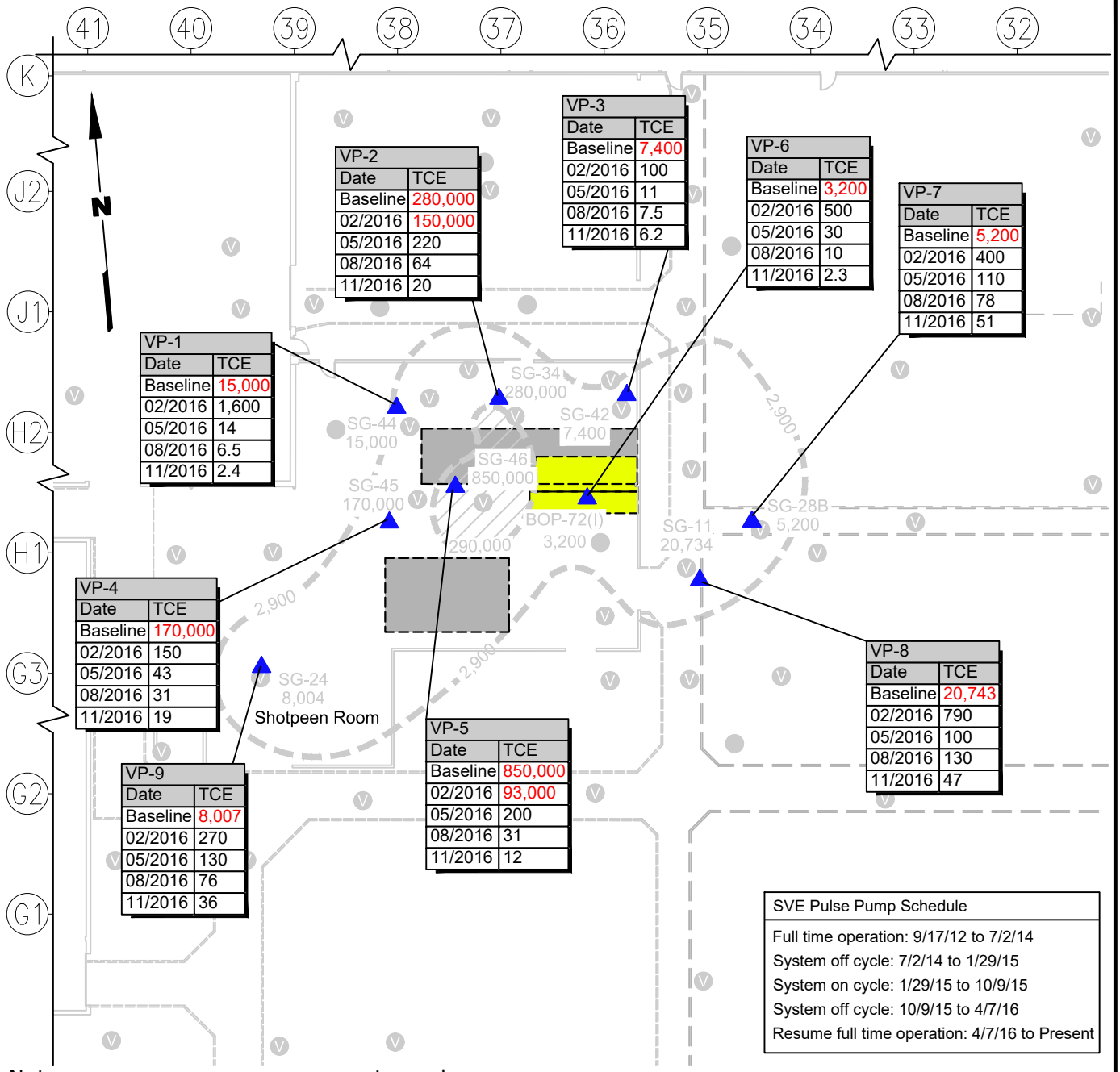
Scale in Feet

LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

Coolant Release Groundwater Results February/August 2016

Figure 4-5



Notes

1. Values shown in Red are above the RBC screening level of 2,900 µg/m^3.
2. Hot spot defined by ODEQ as 100 times greater than the RBC.
3. Sample results vary based on sampling date relative to SVE pulse pump operation schedule.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

BOP-72(i) — TGA Monitoring Well and Sub-Slab Vapor Sampling Location and Designation

VP-1 — Sub-Slab Vapor Pin Location

SG-05 — Sub-Slab Vapor Grab Sampling Location

ND — TCE Not Detected above Laboratory Reporting Limits

Baseline 2012 TCE Isoconcentration Contours

Baseline 2012 Hot Spot

Approximate Location of Basements

Approximate Location of Former Degreasers

0 30 60

Scale in Feet

VP-1
Date TCE
08/2016 6.5

Sample Location

Collection Data and TCE Concentration (µg/m^3)

Source: Boeing 2009

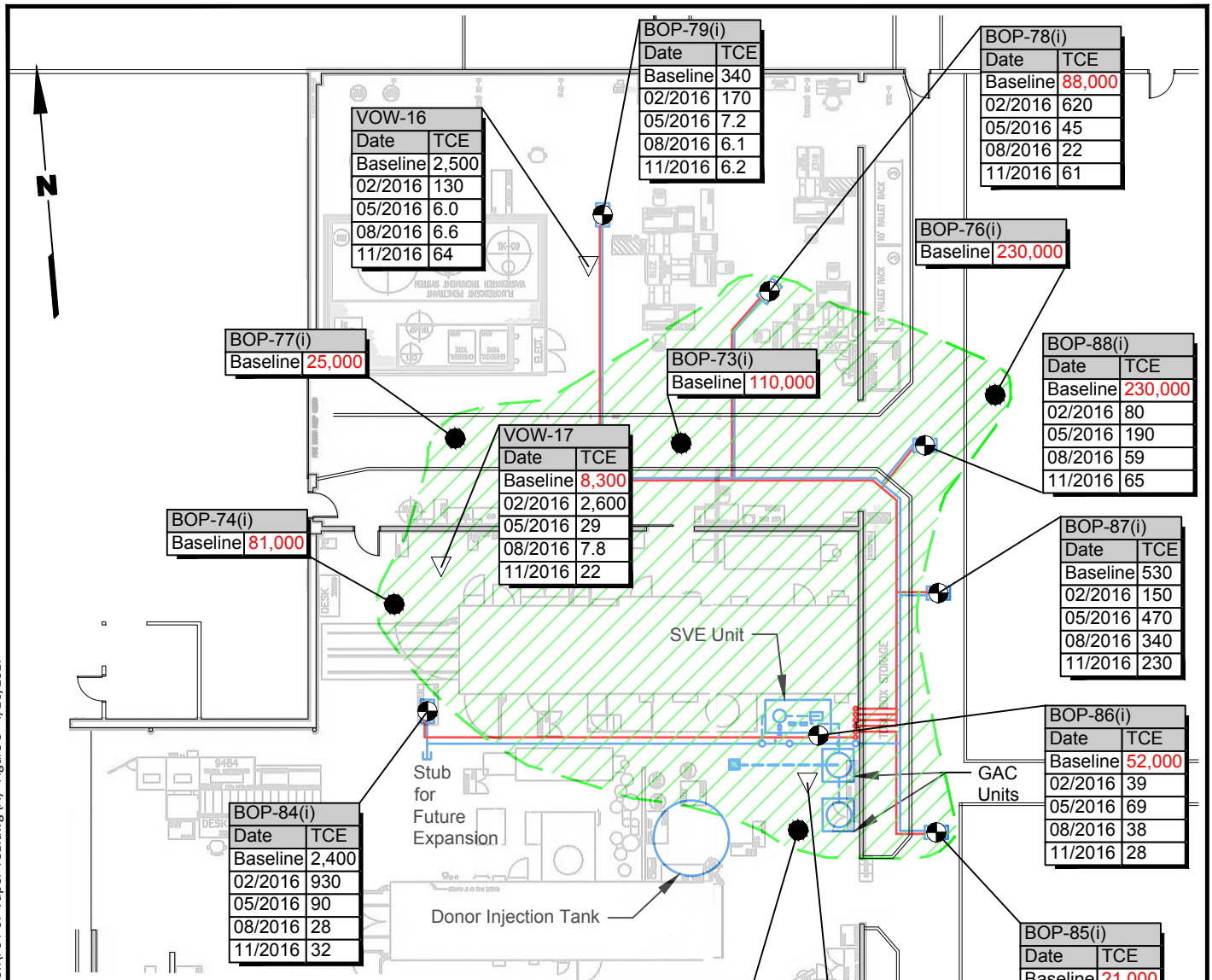
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Gresham, Oregon

Sub-Slab TCE Vapor Results - Former Vapor Degreaser Source Area

Figure 4-6

Landau Associates, Inc. | G:\Projects\025\116\116\430\5 Year Performance Evaluation\F04-06 Vapor TCE SubSlab.dwg (A) "Figure 10" 4/10/2017



Notes

1. Values shown in Red are above screening level (2,900 µg/m^3)
2. Sample results vary based on sampling date relative to SVE pulse pump operation schedule.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

SVE Pulse Pump Schedule
Full time operation: 9/17/12 to 7/2/14
System off cycle: 7/2/14 to 1/29/15
System on cycle: 1/29/15 to 10/9/15
System off cycle: 10/9/15 to 4/7/16
Resume full time operation: 4/7/16 to Present

Legend

- TGA Monitoring Well Location
- Multiple-Purpose SVE and Monitoring Well Location
- Vapor Observation Well Location
- Below-ground Donor Injection Piping
- Below-ground SVE Piping
- Above-ground SVE Piping
- Baseline 2012 Concentrations Above Screening Levels
- NA Not Analyzed

BOP-84(i)
Date | TCE
08/2016 | 28
— Collection Data and TCE Concentration (µg/m^3)

0 20 40
Scale in Feet

Source: The Boeing Company

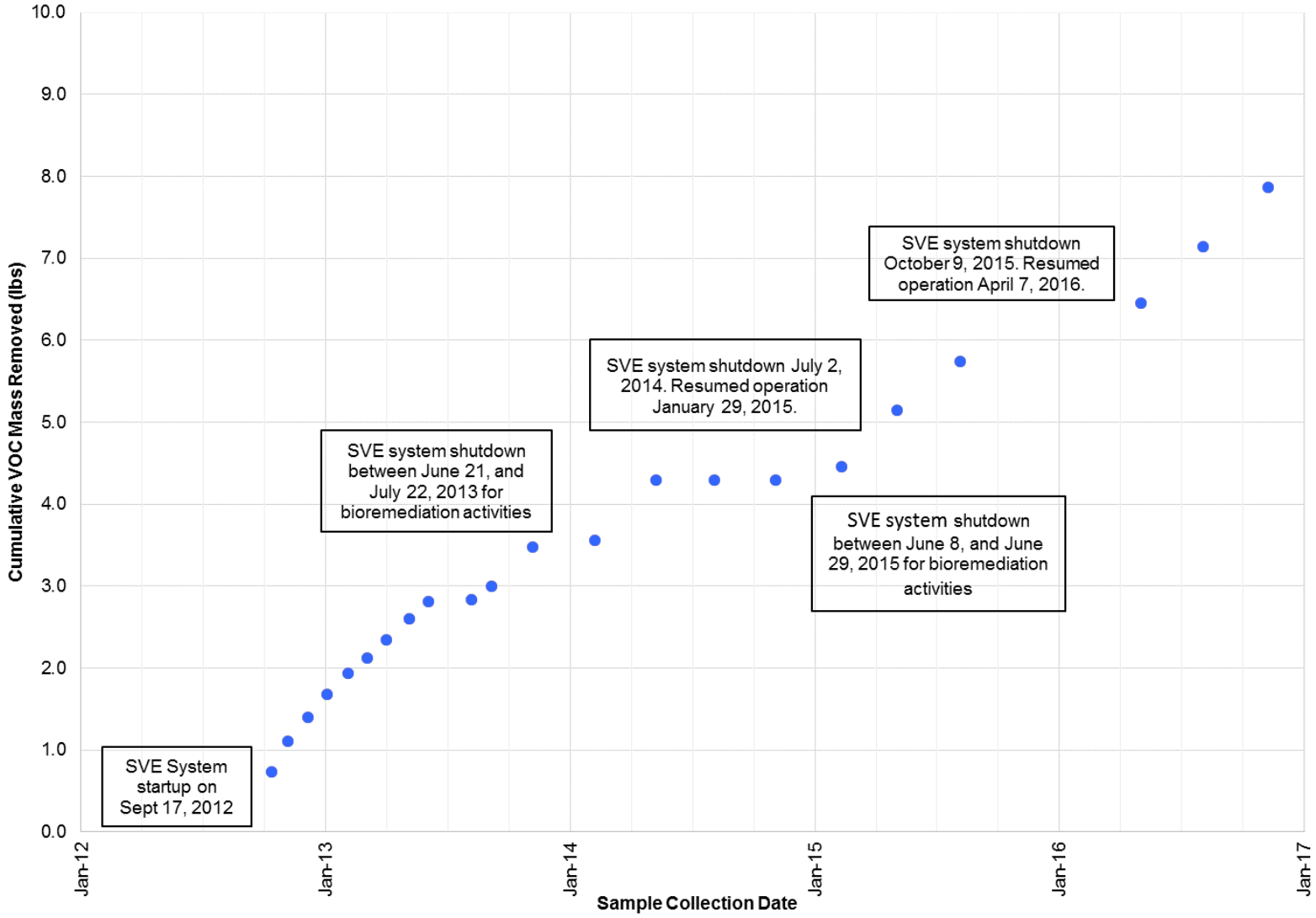
LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

At-Depth TCE Vapor Results - Former Vapor Degreaser Source Area

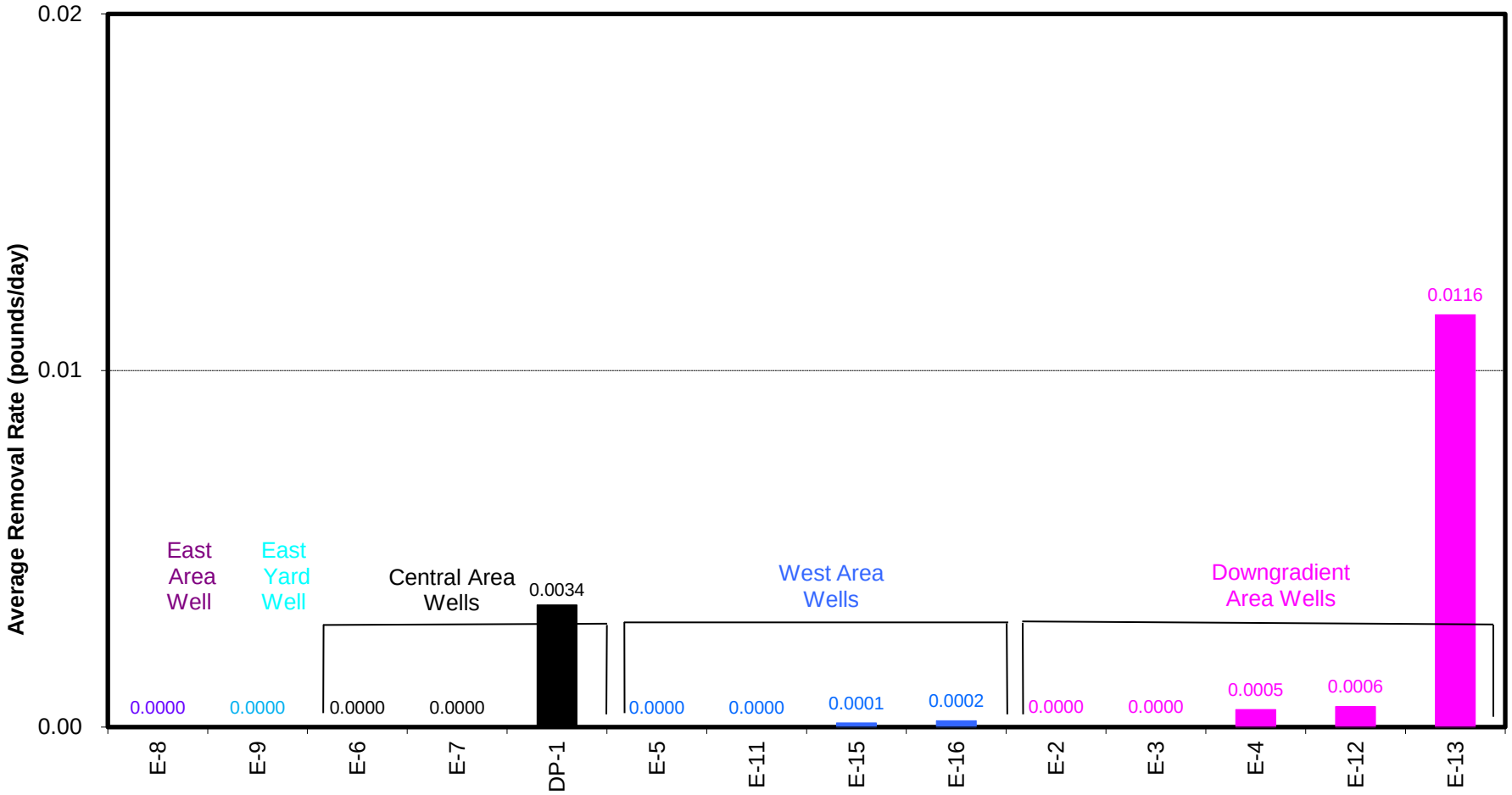
Figure 4-7

LANDAU ASSOCIATES, INC. | G:\Projects\025\116\116\430\5 Year Performance Evaluation\F04-07 Vapor TCE.dwg (A) "Figure 9" 4/16/2017



LANDAU ASSOCIATES	Boeing Portland Gresham, Oregon	**SVE Mass Removal**

Figure
4-8



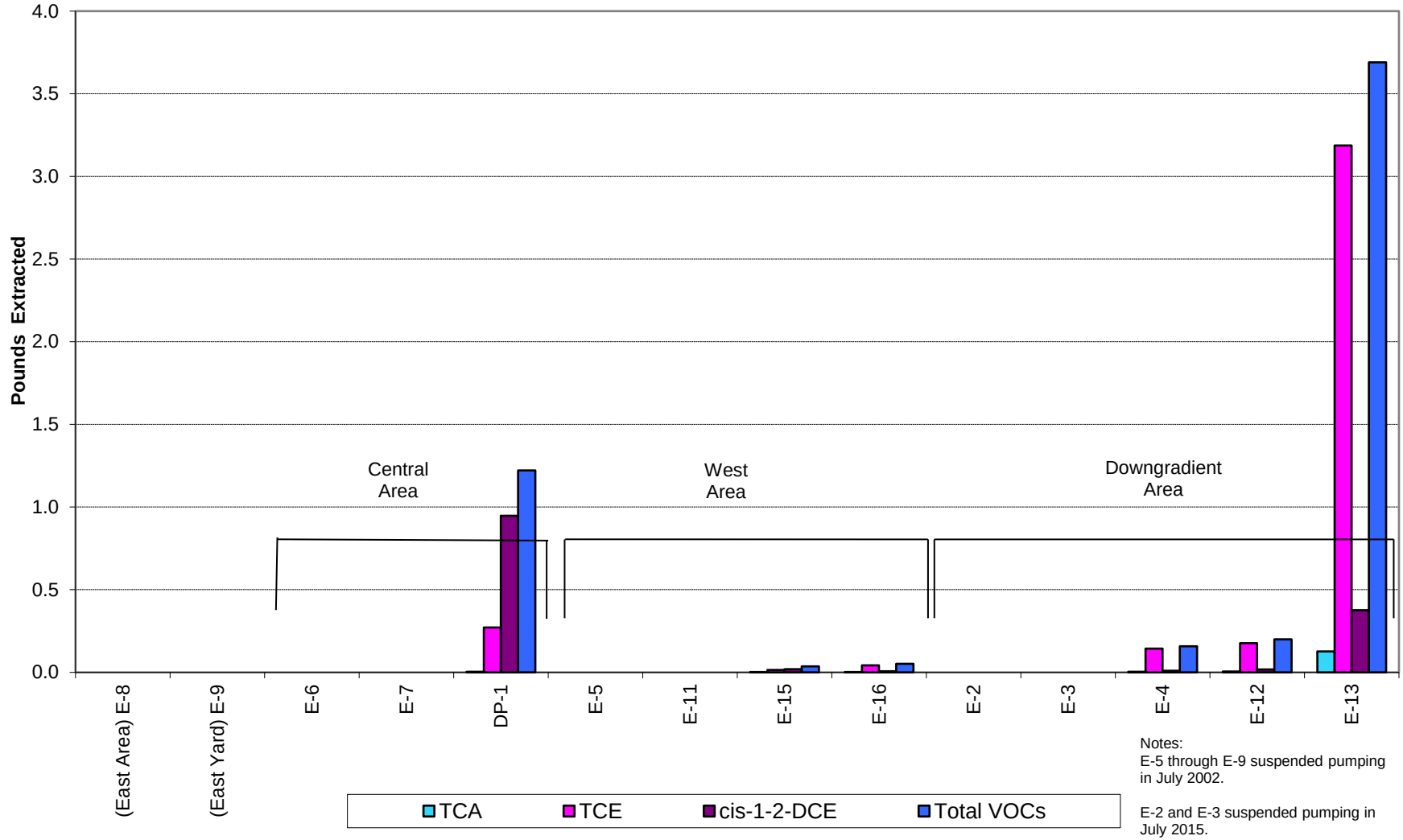
Notes: 1. Total VOCs include the following constituents: TCA, TCE, total 1,2-DCE, PCE, and 1,1-DCE.
2. Pumping operations at well E-1 were suspended in April 2000, well decommissioned in June 2004.
3. Pumping operations at wells E-5 through E-9 were suspended in July 2002.
4. Extraction wells E-10 and E-14 were decommissioned in March and April 2010, respectfully.
5. Pumping operations at wells E-2 and E-3 were suspended in July 2015.

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Gresham, Oregon

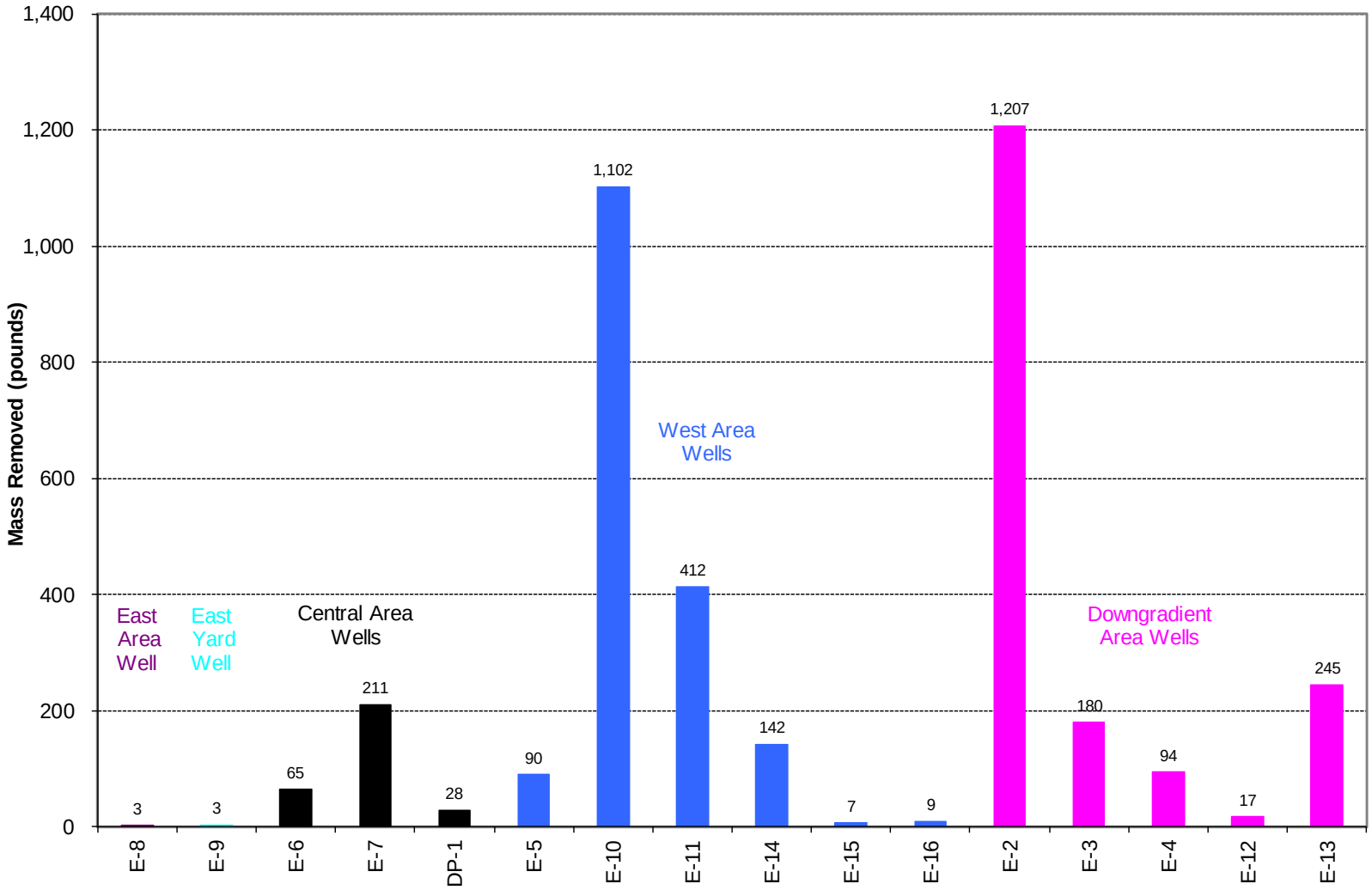
Average Total VOC Mass Removal Rates for 2016

Figure
5-1



LANDAU ASSOCIATES

Boeing Portland Gresham, Oregon	**Mass Removal 2016**	Figure 5-2



Note: Total VOCs include the following constituents: TCA, TCE, total 1,2-DCE, PCE, and 1,1-DCE.

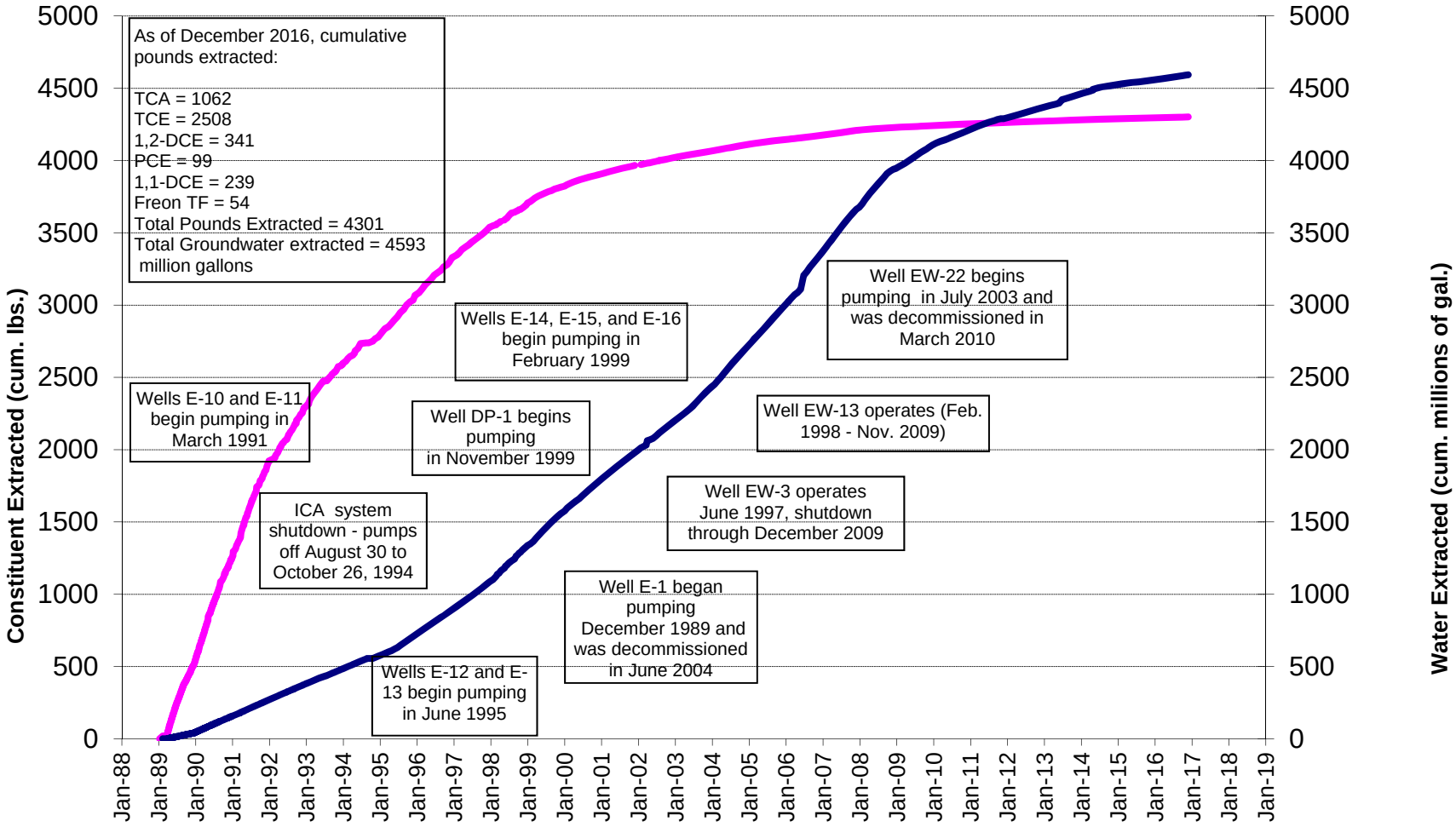
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Boeing Portland
Gresham, Oregon

All Time Total VOC Mass Removed from Groundwater

Figure
5-3

Source\\edmdata01\projects\025\116\WIP\T\TGA\GWTS\E1_13EXT.xlsx

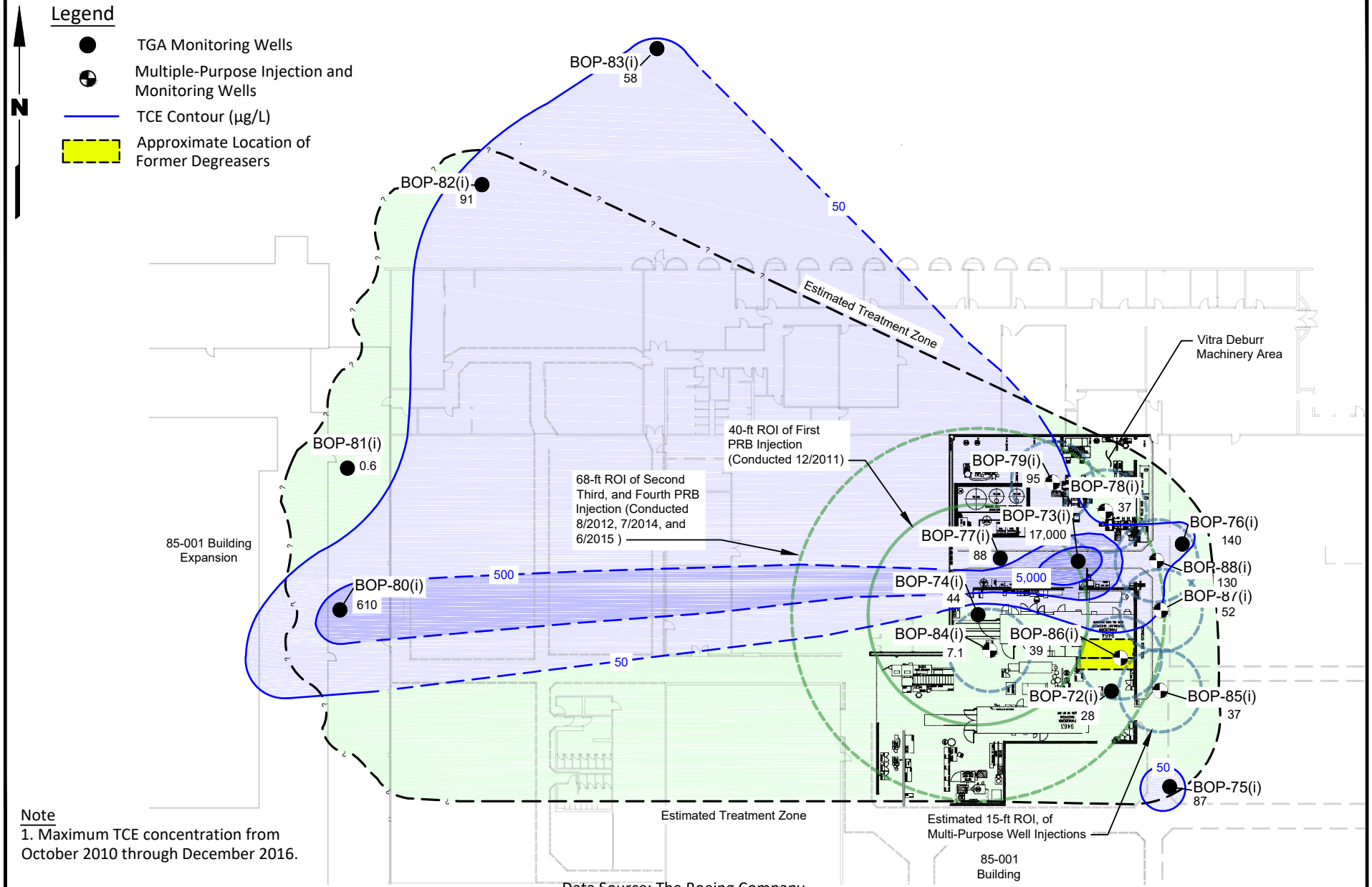


Note: This plot includes wells EW-3, EW-13, and EW-22 which extract groundwater from the TSA.

Note:
E-1 was decommissioned June 2004.
E-10 and E-14 were decommissioned in March and April 2010, respectfully.
E-5 through E-9 suspended pumping in July 2002.
E2 and E-3 suspended pumping in July 2015.

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Boeing Portland Gresham, Oregon	**Groundwater Treatment System Performance**	Figure 5-4



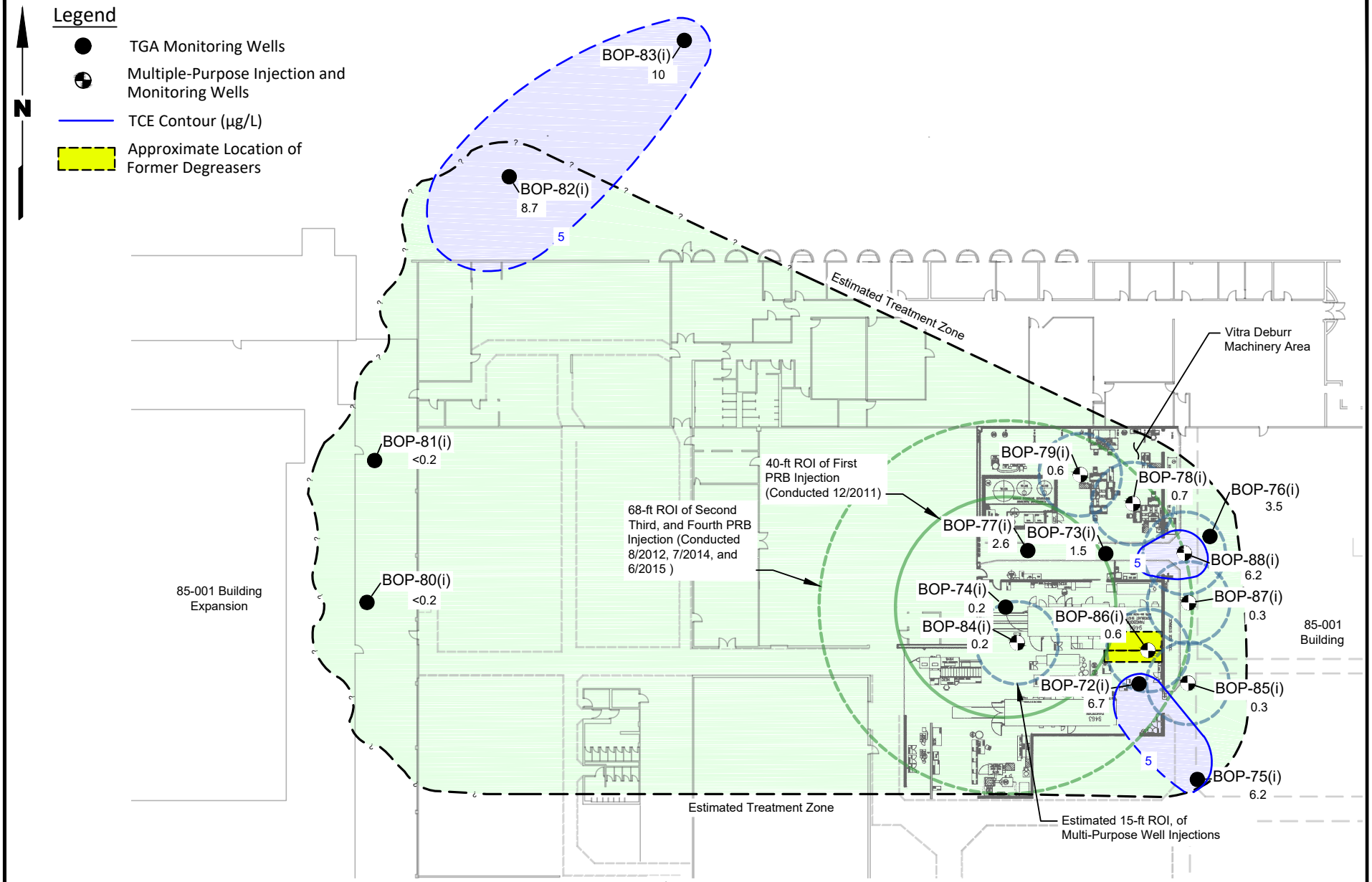
Note
1. Maximum TCE concentration from October 2010 through December 2016.

LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

Former Vapor Degreaser Source Area Progress Plume Maximum TCE Concentration

Figure
6-1



Data Source: The Boeing Company

0 50 100
Scale in Feet

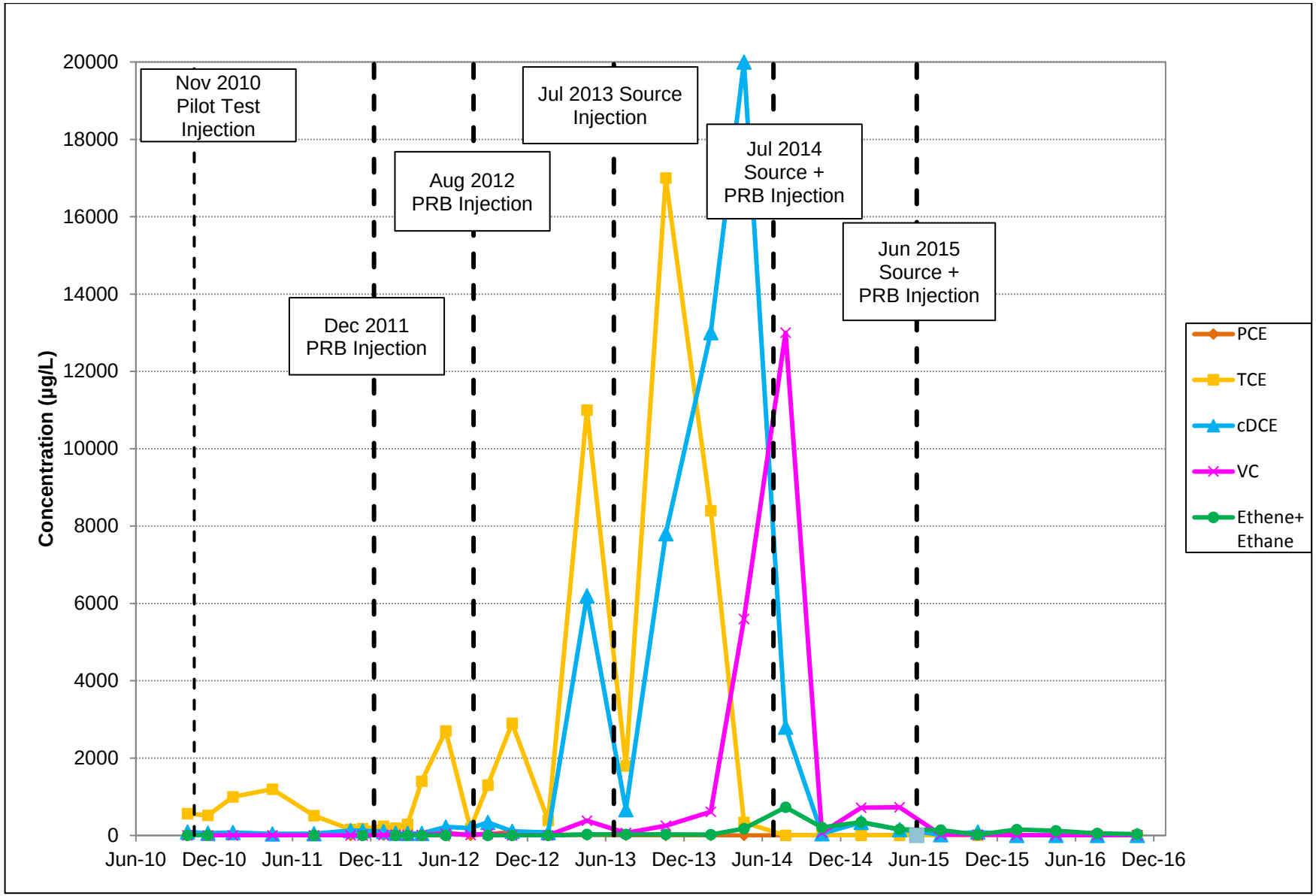
LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

Former Vapor Degreaser Source Area Progress Plume November 2016 TCE Concentrations

Figure
6-2

Source: \\edmdata01\projects\025\116\WIP\T\TGA\Former Degreaser Area Investigation\Groundwater MASTER.xlsx



LANDAU ASSOCIATES

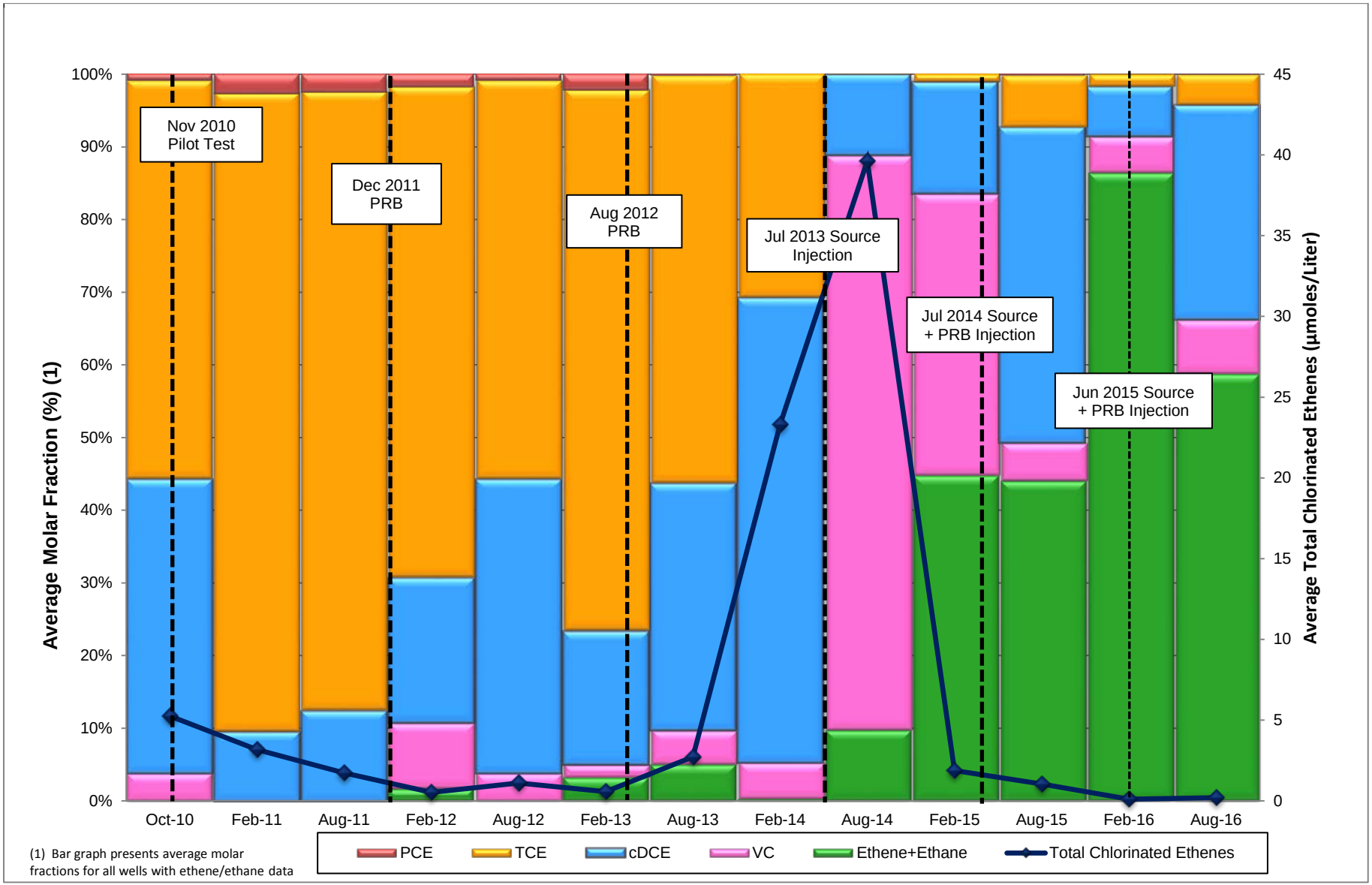
Boeing Portland
Gresham, Oregon

Time verses Concentration Plot-BOP-73(i)

Figure
6-3

P:\025\116\FileRm\R\TGA\TGA 5-Yr Annuals\2012-2016 Ann\Figures\SourceData\Fig 6-4 Avg Mol Frac and Avg Chlor Ethenes.docx

Source: \\edmdata01\projects\025\116\WIP\T\TGA\Former Degreaser Area Investigation\Groundwater MASTER\Avg mol frac and tot chlor.xlsx

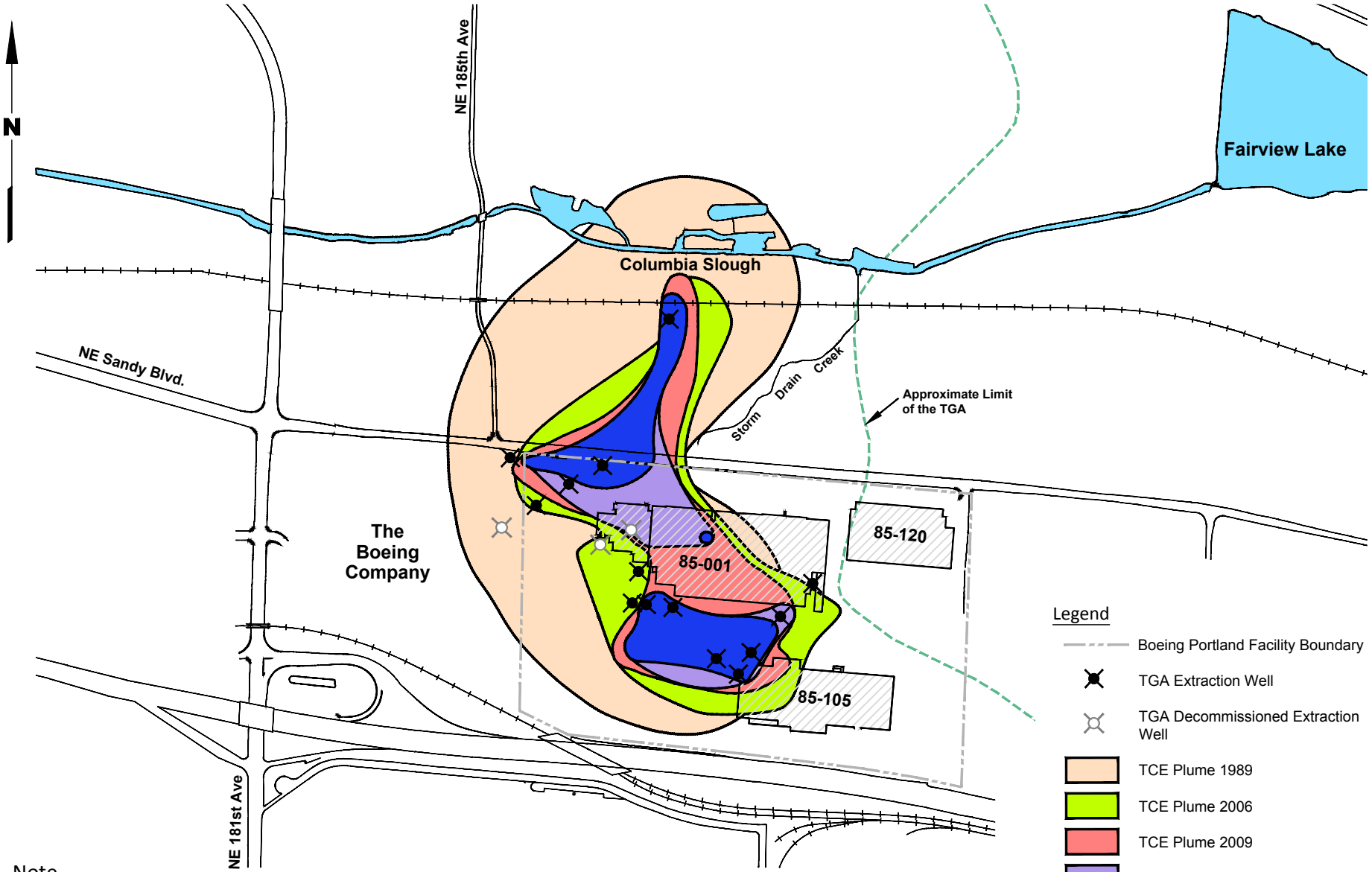


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Boeing Portland
Gresham, Oregon

Average Molar Fraction and Average Chlorinated Ethenes

Figure
6-4



Note

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

0 800 1600
Scale in Feet

LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

TGA Plume Progress Map

Figure
6-5

TABLE 2-1
SUMMARY OF TGA CORRECTIVE ACTION HISTORY
BOEING PORTLAND

Activity	Date	Description	References
I. Initial Investigation and Interim Corrective Actions			
EPA/ODEQ Consent Order Major Investigations	July 31, 1986	Regulatory basis for initial TGA and onsite TSA investigations and interim corrective actions. Investigations to evaluate nature and extent of groundwater and soil contamination on and off site. Major elements included:	Docket # 1086-06-26-3008(h) (EPA 1986)
	1986-1987	• Phase I Investigation – characterize onsite groundwater and soils in TGA and TSA	LAI 1988a (3/17)
	1987	• Soil Gas Survey – further evaluate onsite potential source areas	LAI 1988b (8/19)
	1988-1993	• Phase II Investigation – characterize offsite TGA groundwater	LAI 1993 (6/21)
	1989-1990	• Onsite TSA Investigation – northern (downgradient) portion of facility	LAI 1990a (2/26)
	1991	• SE Corner investigation – further evaluation of southeast portion of facility	LAI 1991 (6117)
	1991	• 85-105 Building expansion	LAI 1992 (4/24)
Interim Corrective Actions		Interim corrective actions included:	
	1986-1997	• Initial Actions Plan – Offsite Drinking Water Sampling Program Sampling area revised 1990	Sweet Edwards & Assoc. 1996, and quarterly reports by Sweet Edwards and Landau Associates. EPA Consent Order Amendment (EPA/ODEQ 1990)
	1988	• Well A-2 Abandoned	LAI 1989a (6/5)
	1989-1993	• ICA Implementation	LAI 1989b (3/31), 1994 (3/4)
	1990	• Rockwood Water District supply well abandoned	LAI 1990b (11/6)
	1991	• 85-105 building excavation – for expansion of 85-105 building	LAI 1992 (4/24)
II. Final RFI Investigations, Additional Interim Corrective Actions, and Corrective Measures			
EPA Consent Order	January 18, 1994	Regulatory basis for Phase III RFI investigation and subsequent interim and final corrective measures studies and implementation	Docket # 1 093-04-02-3008(h) (EPA 1994)
RCRA Facility Investigation	1994-1995	Phase III RCRA facility investigation – further characterization of TGA and shallow TSA groundwater and soil for development of corrective measures	Landau Associates 1995b (7/31)
ODEQ Order on Consent	September 8, 2008	Transfer of regulatory oversight from EPA to ODEQ with adherence to "Final Decision and Response to Comments for the Boeing Portland Facility Troutdale Gravel Aquifer"	Consent Order #: LQSR-NWR-04-12 (ODEQ 2008)

TABLE 2-1
SUMMARY OF TGA CORRECTIVE ACTION HISTORY
BOEING PORTLAND

Activity	Date	Description	References
Additional Interim Corrective Measures		Additional corrective measures activities included:	
	1994	• Status of Interim Measures – report presenting background and current status of interim measures	LAI 1994 (3/4)
	1994	• Phase I Corrective Measures Study – evaluated alternatives for beneficial reuse, performance of SVE pilot tests, and alternatives for ICA system modification	LAI 1995c (7/17)
	1994-1995	• Interim Measures Evaluation – evaluated effectiveness of interim measures implemented to date and documented additional interim measures implementation including: ICA system shutdown, redevelopment of ICA extraction wells, and installation of new ICA extraction wells E-12 and E-13	LAI 1995a (9/15)
	1994-1997	• SVE in West Area	LAI 1995a,d (9/15, 9/11); 1996b,c (1/15, 1/31)
Selected Corrective Measures	1996	• Phase 2 Corrective Measures Study – documents the development and evaluation of potential alternatives for remediation of soil and groundwater in the TGA	LAI 1996a (9/13)
	1997	• EPA Statement of Basis – proposes and explains corrective measures for cleanup of contaminated groundwater at the Boeing facility	EPA 1997b (March 1997)
	1997	• EPA Final Decision and Response to Comments – identifies the corrective measures alternative selected by EPA to be implemented at the Boeing facility	EPA 1997a (July 1997)
	1997 through 1999	• Corrective Measures Implementation – design, testing, and implementation of the EPA-selected corrective measure alternative	LAI 1997 (11/26); 1998 (6/5); 1999f (2/1) AGI 1998 (7/17); 1999a,b (9/17, 2/19 – 2 documents)
		• Performance Monitoring Plan	LAI 1999b,e (2/19 – revised 11/9)
		• Institutional Controls Plan	LAI 1999c,d (2/19 – revised 12/99)
	2000	• TGA Corrective Measure Annual Performance Evaluation – provides summary of remedy performance for 1999	LAI 2000 (3/14)
	2001	• TGA and TSA well abandonment	LAI 2001 c (4/30)
	2001	• Procedures for groundwater and soil vapor extraction wells shutdown	LAI 200 I b (9/25)
	2002	• VE-3 and VE-4 shutdown testing results	LAI 2002b (4/25)
	2002-2003	• E-5 through E-9 shutdown testing results	LAI 2003b (1/17)
	2003	• Update to TGA Corrective Measures	LAI 2003a (9/3)
	2005	• Institutional Controls Plan	LAI 2005 (12/20)

TABLE 2-1
SUMMARY OF TGA CORRECTIVE ACTION HISTORY
BOEING PORTLAND

Activity	Date	Description	References
Selected Corrective Measures (con't)	2006	• TGA Corrective Measure Annual Performance Evaluation provides summary of remedy performance for 2005	LAI 2006 (3/31)
	2009	• Shut down SVE treatment system	LAI 2010 (3/16)
	Ongoing	• Well decommissioning for compliance wells	
Additional Corrective Measures	2006	• Coolant release investigation – Building 85-105	LAI 2007b (1/16)
	2007-2012	• Sump treatment system installation – an oil-water separator treatment to address coolant-impacted water near Building 85-105	LAI 2007 (1/23)
	2007-Ongoing	• Enhanced *in situ* bioremediation – oxygen releasing compound for coolant remedy in groundwater – Building 85-105	LAI 2007 (10/9)
	2008-2009	• Enhanced *in situ* bioremediation – vegetable oil injection in west corrective action area	LAI 2009a (10/21)
	2010	• Soil excavation near proposed building expansion	LAI 2010e (7/6)
	2010	• West source control area investigation	LAI 2011 (6/3)
	2010	• Bioremediation pilot testing for anaerobic bioremediation – former degreaser source area	LAI 2011e (11/16)
	2011-Ongoing	• Permeable Reactive Barrier – *in situ* bioremediation using LactOil directly downgradient of former degreaser source area	LAI 2011 (11/16)
	2011	• Central Source Area Investigation	LAI 2012 (6/5)
	2012	• E-12 Equipment Failure Investigation	LAI 2012 (5/31)
	2012-Ongoing	• Soil Vapor Extraction System for vadose zone remedy – former degreaser source area	LAI 2012 (11/18)
	2013-Ongoing	• Source area Bioremediation – *in situ* bioremediation using multiple purpose wells in former degreaser source area	LAI 2013 (5/21)
	2013	• Southwest source control area investigation	LAI 2013 (12/9)
	2015	• East and East Yard source control area investigation	LAI 2016 (3/23)
	2015	• Groundwater treatment system selection and modification	LAI 2015

TABLE 2-1
SUMMARY OF TGA CORRECTIVE ACTION HISTORY
BOEING PORTLAND

Acronyms/Abbreviations:

AGI =
EPA = US Environmental Protection Agency
ICA = Interim Corrective Action
LAI = Landau Associates, Inc.
ODEQ = Oregon Department of Environmental Quality
RCRA = Resource Conservation Recovery Act
RFI = RCRA Facility Investigation
SVE = Soil Vapor Extraction
TGA = Troutdale Gravel Aquifer
TSA = Troutdale Sandstone Aquifer

Information Sources:

Full reference citations are given in Section 9.0 of this report.

TABLE 3-1
SUMMARY OF CORRECTIVE MEASURES IMPLEMENTATION
BOEING PORTLAND

CORRECTIVE MEASURES ELEMENT	IMPLEMENTATION STATUS
Groundwater Extraction and Treatment	• Full-time operation of extraction wells: E-4, E-12, E-13, E-15, E-16, and DP-1. • Extraction wells in pilot shutdown: E-5 through E-9 (August 2002), E-11 (November 2008), and E-2 and E-3 (July 2015). • Extraction wells decommissioned: E-1 (June 2004), E-10 (March 2010), and E-14 (April 2010).
West Corrective Action Area Soil Vapor Extraction (SVE) with Water Table Depression Pumping	• West Corrective Action Area SVE wells VE-3 and VE-4 were shut down in July 2002 and wells were decommissioned in July 2004. • Pilot tests conducted on VE-5 and VE-7 in April and July 1999, respectively, under conditions of water table depression yielded volatile organic compound (VOC) mass removal rates below minimum criterion; therefore, SVE was not implemented in these wells. • SVE well VE-6 operated from 1999 through 2009. SVE system was shut down in 2009 due to low mass removal rates.
Central Corrective Action Area Dual-Phase Extraction	• Dual-phase extraction wells DP-1 through DP-4 were tested September-October 1998, and additional testing of DP-1 and DP-2 was conducted March-June 1999. • Based on test results, DP-1 was placed into full-time operation in November 1999 as a groundwater extraction well and DP-4 was placed into full-time operation in April 1999 as an SVE well. • Operation of DP-4 as an SVE well was shut down in 2009 and decommissioned in 2016. The SVE system was shut down in 2009 due to low mass removal rates.
Southwest Corrective Action Area and East Yard Corrective Action Area SVE Pilot Tests	• Pilot test was conducted in Southwest Corrective Action Area (VE-8) in April-May 1998 and in the East Yard Corrective Action Area (VE-9) in April 1998; because minimum mass removal rates were not achieved in both wells, SVE was not implemented in the Southwest Corrective Action Area or the East Yard Corrective Action Area.
Performance Monitoring	• Performance monitoring was implemented as outlined in the Phase 2 CMS (Landau Associates [LAI] 1996) and approved by the US Environmental Protection Agency (EPA 1997). • Performance monitoring plan was approved during project transfer from EPA to the Oregon Department of Environmental Quality (ODEQ) in 2008.
Institutional Controls Plan	• Institutional Controls Plan (LAI 2005) incorporated into DEQ Order on Consent.

TABLE 3-1
SUMMARY OF CORRECTIVE MEASURES IMPLEMENTATION
BOEING PORTLAND

CORRECTIVE MEASURES ELEMENT	IMPLEMENTATION STATUS
Additional Supplemental Corrective Measures:	Implementation Status:
Soil Removal	• Source soil removal action: excavated 500 cubic yards in the West Corrective Action Area in 2010.
Investigations of Potential Source Areas	• Conducted investigations of shallow subsurface conditions in the West Source Area, Central Source Area, Southwest Source Area, East Source Area, and East Yard Source Area.
Conveyance Line Relocation	• Relocated conveyance piping to facilitate facility construction efforts.
In Situ Bioremediation	• Anaerobic bioremediation injections in the West Corrective Action Area and the Downgradient Corrective Action Area in 2008, pilot sodium lactate donor injection in the Former Degreaser Source Area in 2010, and injection of lactOil and vegetable oil donor for the Permeable Reactive Barrier directly downgradient of the Former Degreaser Source Area in 2011 through 2015. Bioremediation injections in multiple purpose wells in the Former Degreaser Source Area in 2013 through 2015. • Aerobic bioremediation injections of an oxygen-releasing compound for a localized coolant release in the 85-105 building
Coolant Treatment	• Installation and operation of an oil-water separator treatment system (referred to as the Sump Treatment System [STS]) for coolant-impacted groundwater accumulated in the 85-105 building footing sump.
Soil Vapor Extraction	• SVE system installation in the Former Degreaser Source Area to treat the vadose zone 2012.

Information Sources:
Full reference citations are given in Section 9.0 of this report.

TABLE 3-2
PERFORMANCE MONITORING PROGRAM
BOEING PORTLAND

Aquifer and Well Use	Location	Current Sampling Frequency		Proposed Sampling Frequency (a)	
		Groundwater Elevation	Groundwater Quality	Groundwater Elevation	Groundwater Quality
West Area					
TGA Well	BOP-16(i)	S	Q	S	S
TGA Well	BOP-57(ia)	S	S	S	S
TGA Well	BOP-57(ib)	S	S	A	A
TGA Extraction Well	E-5	S	A	S	A
TGA Extraction Well	E-11	S	A	S	A
TGA Extraction Well	E-15	Q	Q	Q	Q
TGA Extraction Well	E-16	Q	Q	Q	Q
Upper TSA Well	BOP-60R(ds) (b)	A	A	A	A
Central Area					
TGA Well	BOP-10(i)	S	S	S	S
TGA Well	BOP-56(i)	S	S	S	S
TGA Well	BOP-59(i)	S	S	S	S
TGA Extraction Well	E-6	S	A	S	A
TGA Extraction Well	E-7	S	A	S	A
TGA Extraction Well	DP-1	Q	Q	Q	Q
Upper TSA Well	BOP-65(ds) (b)	A	A	A	A
East Yard					
TGA Well	BOP-48(i)	S	A	S	A
TGA Extraction Well	E-9	S	A	S	A
Upper TSA Well	BOP-61(ds) (b)	A	A	A	A
East Area					
TGA Extraction Well	E-8	S	A	S	A
Southwest Area					
TGA Well	BOP-9(i)	S	S	S	S
Upper TSA Well	BOP-62(ds) (b)	A	A	A	A
Downgradient Area					
TGA Well	BOP-7(i)	S	Q	A	A
TGA Well	BOP-7(d)	--	--	Q	Q
TGA Well	D-7(i)	S	A	S	A
TGA Well	D-8(i)	S	S	S	S
TGA Well	D-11(i)	S	A	S	A
TGA Well	D-12(i)	S	S	S	S
TGA Extraction Well	E-2	S	S	S	S
TGA Extraction Well	E-3	S	S	S	S
TGA Extraction Well	E-4	Q	Q	Q	Q
TGA Extraction Well	E-12	Q	S	Q	Q
TGA Extraction Well	E-13	Q	S	Q	Q
Upper TSA Well	BOP-22R(ds) (b)	A	A	A	A

TABLE 3-2
PERFORMANCE MONITORING PROGRAM
BOEING PORTLAND

Aquifer and Well Use	Location	Current Sampling Frequency		Proposed Sampling Frequency (a)	
		Groundwater Elevation	Groundwater Quality	Groundwater Elevation	Groundwater Quality
Former Degreaser Source Control Area					
TGA Well	BOP-72(i)	Q	Q	S	S
TGA Well	BOP-73(i)	Q	Q	S	S
TGA Well	BOP-74(i)	Q	Q	S	S
TGA Well	BOP-75(i)	Q	Q	S	S
TGA Well	BOP-76(i)	Q	Q	S	S
TGA Well	BOP-77(i)	Q	Q	S	S
TGA Well	BOP-78(i)	Q	Q	S	S
TGA Well	BOP-79(i)	Q	Q	S	S
TGA Well	BOP-80(i)	Q	Q	S	S
TGA Well	BOP-81(i)	Q	Q	S	S
TGA Well	BOP-82(i)	Q	Q	S	S
TGA Well	BOP-83(i)	Q	Q	S	S
TGA Well	BOP-84(i)	Q	Q	S	S
TGA Well	BOP-85(i)	Q	Q	S	S
TGA Well	BOP-86(i)	Q	Q	S	S
TGA Well	BOP-87(i)	Q	Q	S	S
TGA Well	BOP-88(i)	Q	Q	S	S
Coolant Release					
TGA Well	LAI-1	Q	C-A	A	C-A
TGA Well	LAI-2	Q	C-A	A	C-A
TGA Well	LAI-3	Q	C-A	A	C-A
TGA Well	LAI-4	Q	S/C-S	S	S/C-S
TGA Well	LAI-5	Q	C-A	A	C-A
TGA Well	LAI-6	Q	C-A	A	C-A
TGA Well	LAI-7	Q	S/C-S	S	S/C-S
TGA Well	LAI-8	Q	S/C-S	S	S/C-S

Acronyms/Abbreviations:

A = Annual
BOP = Boeing of Portland
C = Coolant
D = Discontinue Monitoring
ODEG = Oregon Department of Environmental Quality
S = Semiannual
TGA = Troutdale Gravel Aquifer
TSA = Troutdale Sandstone Aquifer
Q = Quarterly
S/C-A = Well sampled for multiple purposes. First abbreviation indicates sampling frequency for VOC remedy/second abbreviation indicates sampling frequency for coolant release.
'-- = New well not included in previous monitoring program.

Notes:

(a) Proposed modifications based on performance review; will be inacted upon ODEQ approval.
(b) TSA water quality data collected to evaluate remedy performance as part of TGA corrective measure performance. Diffusion Bag Samples (DBS) to be utilized for TSA sample collection.

Red colored text indicates proposed modification to monitoring frequency.

TABLE 3-3
DECOMMISSIONED WELLS - JANUARY 1 - DECEMBER 31, 2016
BOEING PORTLAND

Well	Installation Date	Decommissioned Date	Aquifer Screened	X Coordinate	Y Coordinate	Elevations, ft MSL				Depth of Well (ft)
						Ground Surface	Measuring Point	Top of Screen	Bottom of Screen	
TGA Monitoring Wells										
D-2(i)	05/13/88	10/31/16	TGA	1494818.0	692345.0	16.8	18.77	-75.2	-95.2	122
D-3(i)	05/03/88	10/06/16	TGA	1495389.0	692130.0	42.0	43.72	-79.8	-99.5	151.5
BOP-7d	10/28/16	--	TGA	1495265.0	691101.9	82.48	82.28	-65.0	-75.0	158.5
TGA Dual Phase Extraction Well										
DP-4	03/04/98	10/14/16	TGA	1496169.8	690364.4	NA	NA	NA	NA	78

Acronyms/Abbreviations:
BOP = Boeing of Portland
ft = feet
MSL = mean sea level = No data available in database
TGA = Troutdale Gravel Aquifer

TABLE 4-1
GROUNDWATER ELEVATION DATA
TGA MONITORING PROGRAM
JANUARY 1 THROUGH DECEMBER 31, 2016

	Date	Time	Reference Elev. (a) (ft, MSL)	Depth to Water (ft)	Groundwater Elevation (ft)
TGA WELLS					
BOP-7(i)	2/1/2016	17:05	83.08	58.10	24.98
BOP-7(i)	5/3/2016	10:28	83.08	57.61	25.47
BOP-7(i)	8/2/2016	13:35	83.08	58.40	24.68
BOP-7(i)	11/4/2016	13:59	83.08	58.10	24.98
BOP-7(d)	11/3/2016	14:34	82.48	58.23	24.25
BOP-9(i)	2/1/2016	15:32	114.74	79.43	35.31
BOP-9(i)	8/2/2016	13:08	114.74	79.13	35.61
BOP-10(i)	2/1/2016	12:55	109.16	37.83	71.33
BOP-10(i)	8/2/2016	11:09	109.16	38.77	70.39
BOP-16(i)	2/1/2016	15:27	89.08	56.91	32.17
BOP-16(i)	8/2/2016	8:45	89.08	57.07	32.01
BOP-48(i)	2/1/2016	14:13	94.17	10.08	84.09
BOP-48(i)	8/2/2016	12:02	94.17	12.73	81.44
BOP-56(i)	2/1/2016	13:04	99.07	57.42	41.65
BOP-56(i)	8/2/2016	11:51	99.07	56.88	42.19
BOP-57(ia) (b)	2/1/2016	11:08	95.45	58.37	37.08
BOP-57(ia) (b)	8/2/2016	10:22	95.45	58.47	36.98
BOP-57(ib) (b)	2/1/2016	11:19	94.57	58.56	36.01
BOP-57(ib) (b)	8/2/2016	10:18	94.57	58.51	36.06
BOP-59(i)	2/1/2016	12:31	110.20	39.21	70.99
BOP-59(i)	8/2/2016	11:00	110.20	39.67	70.53
D-7(i)	2/1/2016	9:10	45.38	31.17	14.21
D-7(i)	8/2/2016	7:49	45.38	32.83	12.55
D-8(i)	2/1/2016	9:13	29.30	15.71	13.59
D-8(i)	8/2/2016	7:57	29.30	17.36	11.94
D-11(i)	2/1/2016	9:32	77.11	59.77	17.34
D-11(i)	8/2/2016	8:11	77.11	63.61	13.50
D-12(i)	2/1/2016	9:35	33.51	20.02	13.49
D-12(i)	8/2/2016	8:22	33.51	21.74	11.77
COOLANT RELEASE WELLS					
LAI-1	8/2/2016	14:29	109.86	26.47	83.39
LAI-2	8/2/2016	14:36	109.89	23.72	86.17
LAI-3	8/2/2016	14:40	109.85	21.26	88.59
LAI-4	2/1/2016	16:21	110.71	20.38	90.33
LAI-4	8/2/2016	14:44	110.71	21.62	89.09
LAI-5	8/2/2016	14:48	110.56	20.34	90.22
LAI-6	8/2/2016	14:51	110.65	21.22	89.43
LAI-7	2/1/2016	16:16	109.90	25.56	84.34
LAI-7	8/2/2016	14:27	109.90	27.17	82.73
LAI-8	2/1/2016	16:14	110.59	Dry	Dry
LAI-8	8/2/2016	11:03	110.59	Dry	Dry

TABLE 4-1
GROUNDWATER ELEVATION DATA
TGA MONITORING PROGRAM
JANUARY 1 THROUGH DECEMBER 31, 2016

	Date	Time	Reference Elev. (a) (ft, MSL)	Depth to Water (ft)	Groundwater Elevation (ft)
TSA WELLS					
BOP-22R(ds)	8/2/2016	13:20	82.91	71.96	10.95
BOP-60R(ds)	8/2/2016	10:43	82.80	71.53	11.27
BOP-61(ds)	2/1/2016	14:03	94.64	86.00	8.64
BOP-61(ds)	8/2/2016	12:07	94.64	84.35	10.29
BOP-62(ds)	2/1/2016	16:39	112.29	101.01	11.28
BOP-62(ds)	8/2/2016	10:52	112.29	100.86	11.43
BOP-65(ds)	2/1/2016	16:34	104.22	92.21	11.31
BOP-65(ds)	8/2/2016	11:13	104.22	92.41	11.81
BOP-66(ds)	2/1/2016	16:28	102.97	92.80	10.17
BOP-66(ds)	8/2/2016	14:58	102.97	90.92	12.05
FORMER VAPOR DEGREASER AREA WELLS					
BOP-72(i)	2/1/2016	8:15	83.64	42.05	41.59
BOP-72(i)	5/2/2016	14:33	83.64	41.73	41.91
BOP-72(i)	8/2/2016	15:46	83.64	43.00	40.64
BOP-72(i)	11/4/2016	11:48	83.64	43.79	39.85
BOP-73(i)	2/1/2016	8:35	83.65	43.70	39.95
BOP-73(i)	5/2/2016	13:18	83.65	43.43	40.22
BOP-73(i)	8/2/2016	16:23	83.65	44.85	38.80
BOP-73(i)	11/4/2016	13:00	83.65	45.30	38.35
BOP-74(i)	2/1/2016	9:10	83.69	55.85	27.84
BOP-74(i)	5/2/2016	12:17	83.69	54.90	28.79
BOP-74(i)	8/3/2016	9:25	83.69	57.87	25.82
BOP-74(i)	11/4/2016	13:29	83.69	55.48	28.21
BOP-75(i)	2/1/2016	8:25	83.70	41.44	42.26
BOP-75(i)	5/2/2016	14:38	83.70	40.60	43.10
BOP-75(i)	8/2/2016	16:01	83.70	41.90	41.80
BOP-75(i)	11/4/2016	15:18	83.70	42.80	40.90
BOP-76(i)	2/1/2016	8:30	83.65	41.55	42.26
BOP-76(i)	5/2/2016	14:40	83.65	41.49	42.16
BOP-76(i)	8/2/2016	16:19	83.65	43.02	40.63
BOP-76(i)	11/4/2016	11:09	83.65	43.28	40.37
BOP-77(i)	2/1/2016	8:40	83.68	46.71	36.97
BOP-77(i)	5/2/2016	13:31	83.68	45.46	38.22
BOP-77(i)	8/3/2016	9:14	83.68	48.24	35.44
BOP-77(i)	11/4/2016	15:22	83.68	46.26	37.42
BOP-78(i)	2/1/2016	8:56	83.16	48.06	35.10
BOP-78(i)	5/2/2016	12:30	83.16	45.95	37.21
BOP-78(i)	8/3/2016	8:59	83.16	47.55	35.61
BOP-78(i)	11/4/2016	12:34	83.16	48.31	34.85
BOP-79(i)	2/1/2016	8:49	83.34	49.08	34.26
BOP-79(i)	5/2/2016	12:40	83.34	47.64	35.70
BOP-79(i)	8/3/2016	8:41	83.34	48.54	34.80
BOP-79(i)	11/4/2016	12:13	83.34	49.33	34.01
BOP-80(i)	2/1/2016	15:13	83.60	47.78	35.82
BOP-80(i)	5/2/2016	11:34	83.60	47.89	35.71
BOP-80(i)	8/2/2016	15:21	83.60	49.50	34.10
BOP-80(i)	11/4/2016	9:20	83.60	50.15	33.45

TABLE 4-1
GROUNDWATER ELEVATION DATA
TGA MONITORING PROGRAM
JANUARY 1 THROUGH DECEMBER 31, 2016

	Date	Time	Reference Elev. (a) (ft, MSL)	Depth to Water (ft)	Groundwater Elevation (ft)
BOP-81(i)	2/1/2016	15:16	83.57	47.99	35.58
BOP-81(i)	5/2/2016	11:38	83.57	48.29	35.28
BOP-81(i)	8/2/2016	15:17	83.57	50.20	33.37
BOP-81(i)	11/4/2016	10:27	83.57	50.82	32.75
BOP-82(i)	2/1/2016	15:20	81.10	49.53	31.57
BOP-82(i)	5/2/2016	11:45	81.10	49.54	31.56
BOP-82(i)	8/2/2016	15:14	81.10	51.68	29.42
BOP-82(i)	11/4/2016	14:30	81.10	52.20	28.90
BOP-83(i)	2/1/2016	15:08	80.42	49.36	31.06
BOP-83(i)	5/2/2016	14:50	80.42	48.94	31.48
BOP-83(i)	8/2/2016	15:12	80.42	51.58	28.84
BOP-83(i)	11/4/2016	14:40	80.42	52.52	27.90
BOP-84(i)	2/1/2016	9:44	83.67	58.04	25.63
BOP-84(i)	5/2/2016	12:10	83.67	57.15	26.52
BOP-84(i)	8/3/2016	8:35	83.67	58.93	24.74
BOP-84(i)	11/4/2016	13:01	83.67	60.40	23.27
BOP-85(i)	2/1/2016	9:23	83.69	50.36	33.33
BOP-85(i)	5/2/2016	13:20	83.69	48.38	35.31
BOP-85(i)	8/2/2016	16:06	83.69	49.22	34.47
BOP-85(i)	11/4/2016	10:34	83.69	50.62	33.07
BOP-86(i)	2/1/2016	9:50	83.70	53.56	30.14
BOP-86(i)	5/2/2016	13:40	83.70	50.74	32.96
BOP-86(i)	8/2/2016	15:40	83.70	54.81	28.89
BOP-86(i)	11/4/2016	10:07	83.70	52.40	31.30
BOP-87(i)	2/1/2016	9:15	83.68	52.05	31.63
BOP-87(i)	5/2/2016	13:30	83.68	52.10	31.58
BOP-87(i)	8/2/2016	16:11	83.68	52.98	30.70
BOP-87(i)	11/4/2016	10:58	83.68	53.76	29.92
BOP-88(i)	2/1/2016	9:30	83.67	60.54	23.13
BOP-88(i)	5/2/2016	13:00	83.67	57.38	26.29
BOP-88(i)	8/3/2016	8:32	83.67	53.34	30.33
BOP-88(i)	11/4/2016	11:18	83.67	52.85	30.82
TGA EXTRACTION WELLS					
E-2	2/1/2016	7:40	86.55	57.05	29.50
E-2	5/3/2016	14:26	86.55	41.73	41.91
E-2	8/2/2016	13:12	86.55	57.06	29.49
E-2	11/3/2016	16:55	86.55	43.79	39.85
E-3	2/1/2016	8:03	82.29	57.28	25.01
E-3	5/2/2016	10:22	82.29	57.00	25.29
E-3	8/2/2016	13:28	82.29	59.13	23.16
E-3	11/3/2016	13:48	82.29	59.89	22.40
E-4	2/1/2016	10:10	74.53	55.75	18.78
E-4	5/3/2016	15:49	74.53	96.11	-21.58
E-4	8/2/2016	13:00	74.53	59.76	14.77
E-4	11/3/2016	15:57	74.53	61.13	13.40
E-5	2/1/2016	13:20	93.48	58.02	35.46
E-5	5/3/2016	9:20	93.48	57.12	36.36
E-5	8/2/2016	10:26	93.48	58.14	35.34
E-5	11/4/2016	11:59	93.48	59.30	34.18

TABLE 4-1
GROUNDWATER ELEVATION DATA
TGA MONITORING PROGRAM
JANUARY 1 THROUGH DECEMBER 31, 2016

	Date	Time	Reference Elev. (a) (ft, MSL)	Depth to Water (ft)	Groundwater Elevation (ft)
E-6	2/1/2016	12:34	108.47	62.00	46.47
E-6	5/3/2016	10:00	108.47	61.52	46.95
E-6	8/2/2016	11:05	108.47	61.83	46.64
E-6	11/4/2016	12:11	108.47	62.47	46.00
E-7	2/1/2016	12:36	104.19	25.93	78.26
E-7	5/3/2016	9:43	104.19	25.69	78.50
E-7	8/2/2016	11:16	104.19	27.30	76.89
E-7	11/4/2016	12:14	104.19	27.96	76.23
E-8	2/1/2016	13:55	93.23	8.09	85.14
E-8	5/3/2016	9:26	93.23	8.99	84.24
E-8	8/2/2016	11:55	93.23	10.90	82.33
E-8	11/4/2016	13:59	93.23	9.76	83.47
E-9	2/1/2016	13:59	80.91	5.83	75.08
E-9	5/3/2016	9:50	80.91	6.56	74.35
E-9	8/2/2016	11:58	80.91	7.72	73.19
E-9	11/4/2016	13:56	80.91	7.62	73.29
E-11	2/1/2016	13:25	101.01	23.75	77.26
E-11	5/3/2016	8:58	101.01	30.38	70.63
E-11	8/2/2016	9:54	101.01	43.80	57.21
E-11	11/4/2016	16:18	101.01	NM	NM
E-12	2/1/2016	8:11	79.35	57.85	21.50
E-12	5/3/2016	7:16	79.35	88.05	-8.70
E-12	8/2/2016	7:19	79.35	88.91	-9.56
E-12	11/3/2016	13:59	79.35	86.87	-7.52
E-13	2/1/2016	9:02	43.14	40.16	2.98
E-13	5/3/2016	7:50	43.14	50.37	-7.23
E-13	8/2/2016	6:43	43.14	50.06	-6.92
E-13	11/3/2016	15:41	43.14	48.85	-5.71
E-15	2/1/2016	10:33	81.00	67.80	13.20
E-15	5/3/2016	9:09	81.00	60.43	20.57
E-15	8/2/2016	10:38	81.00	50.31	30.69
E-15	11/3/2016	16:10	81.00	54.03	26.97
E-16	2/1/2016	11:00	93.80	58.16	35.64
E-16	5/3/2016	9:04	93.80	61.31	32.49
E-16	8/2/2016	10:15	93.80	59.65	34.15
E-16	11/3/2016	16:13	93.80	61.17	32.63
DP1	2/1/2016	12:30	108.80	56.44	52.36
DP1	5/3/2016	10:10	108.80	57.02	51.78
DP1	8/2/2016	10:58	108.80	50.28	58.52
DP1	11/3/2016	16:20	108.80	58.34	50.46

ft = feet
MSL = mean sea level
TGA = Troutdale Gravel Aquifer
TSA = Troutdale Sandstone Aquifer
PVC = polyvinyl chloride
NM = not measured

(a) Reference Elevation for the top of PVC well casing.
(b) West Area wells BOP-57(ia, ib) are installed with short (5 ft) screens. BOP-57(ia) is screened at the base of the TGA, while BOP-57(ib) is screened within the first layer of the Confining Unit 1 (CU1).

TABLE 4-2
GROUNDWATER QUALITY SUMMARY
TGA MONITORING PROGRAM 2016
BOEING PORTLAND

Area	Location	Date	1,1-DCE	cDCE	1,1,1-TCA	PCE	TCE	VC
		MCL:	**7**	**70**	**200**	**5**	**5**	**2**
West Corrective Action Area:								
	BOP-16(i)	2/4/2016	ND	0.2	ND	ND	3.5	0.3
	BOP-16(i)	5/5/2016	ND	ND	ND	ND	1.8	ND
	BOP-16(i)	8/11/2016	0.6	3.3	ND	ND	5.0	1.9
	BOP-16(i)	11/8/2016	0.9	3.0	ND	0.8	8.7	0.8
	BOP-57(ia) (a)	2/1/2016	ND	0.4	ND	0.2	2.4	ND
	BOP-57(ia) (a)	8/3/2016	0.3	2.2	ND	1.7	11	ND
	BOP-57(ib) (a)	2/1/2016	38	11	17	0.8	50	0.4
	BOP-57(ib) (a)	8/3/2016	27	8.8	7.4	0.9	43	0.2
	E-5	8/15/2016	ND	ND	ND	ND	0.4	ND
	E-11	8/22/2016	ND	ND	ND	ND	ND	ND
	E-15	2/5/2016	2.2	8.3	ND	ND	3.0	5.6
	E-15	5/5/2016	0.9	5.2	ND	ND	0.4	5.5
	E-15	8/10/2016	0.2	1.3	ND	ND	0.2	1.3
	E-15	11/7/2016	ND	0.6	ND	ND	ND	0.9
	E-16	2/26/2016	0.2	0.9	ND	1.5	6.3	ND
	E-16	5/5/2016	0.3	1.2	ND	2.3	7.7	ND
	E-16	8/10/2016	0.2	1.4	ND	2.8	8.3	ND
	E-16	11/7/2016	0.3	1.2	ND	2.3	8.8	ND
Central Corrective Action Area:								
	BOP-10(i)	2/5/2016	ND	1.6	ND	7.2	13	ND
	BOP-10(i)	8/8/2016	ND	1.5	ND	6.6	13	ND
	BOP-56(i)	2/1/2016	ND	2.2	ND	2.5	17	ND
	BOP-56(i)	8/8/2016	ND	1.2	ND	3.9	11	ND
	BOP-59(i)-Dup	2/5/2016	ND	3.3	ND	0.3	4.5	ND
	BOP-59(i)	2/5/2016	ND	3.3	ND	0.3	4.5	ND
	BOP-59(i)-Dup	8/8/2016	ND	1.3	ND	1.9	5.4	ND
	BOP-59(i)	8/8/2016	ND	1.4	ND	2.0	5.7	ND
	E-6	8/18/2016	ND	2.8	ND	7.0	13	ND
	E-7	8/12/2016	ND	17	ND	37	19	ND
	DP1	2/5/2016	0.3	74	ND	13	22	ND
	DP1	5/3/2016	0.2	88	ND	16	24	ND
	DP1	8/10/2016	0.2	74	ND	11	21	ND
	DP1	11/7/2016	0.3	87	ND	17	26	ND
	BOP-65(ds)	2/2/2016	ND	0.2	ND	ND	1.1	ND
	BOP-65(ds)	8/10/2016	ND	ND	ND	ND	0.9	ND
Coolant Release Area:								
	LAI-4	2/5/2016	ND	0.2	ND	ND	0.9	ND
	LAI-4	8/4/2016	ND	0.3	ND	ND	0.8	ND
	LAI-7	2/5/2016	ND	2.1	ND	2.0	5.1	ND
	LAI-7	8/4/2016	ND	1.6	ND	2.7	4.8	ND

TABLE 4-2
GROUNDWATER QUALITY SUMMARY
TGA MONITORING PROGRAM 2016
BOEING PORTLAND

Area	Location	Date	1,1-DCE	cDCE	1,1,1-TCA	PCE	TCE	VC
		MCL:	**7**	**70**	**200**	**5**	**5**	**2**
East Yard Corrective Action Area:								
	BOP-48(i)	8/8/2016	ND	ND	ND	ND	0.9	ND
	E-9	8/12/2016	ND	ND	ND	0.3	0.6	ND
	BOP-61(ds)	2/2/2016	ND	1.3	ND	0.3	7.6	ND
	BOP-61(ds)	8/10/2016	ND	0.6	ND	0.2	5.8	ND
East Corrective Action Area:								
	E-8	8/12/2016	ND	0.3	ND	3.0	2.3	ND
	BOP-66(ds)	2/2/2016	ND	ND	ND	ND	1.9	ND
	BOP-66(ds)	8/10/2016	ND	ND	ND	ND	1.1	ND
Southwest Corrective Action Area:								
	BOP-9(i)	2/1/2016	1.2	8.8	ND	2.6	30	ND
	BOP-9(i)	8/8/2016	1.5	11	ND	3.5	35	ND
	BOP-62(ds)	8/10/2016	ND	ND	ND	ND	0.6	ND
Downgradient Corrective Action Area:								
	BOP-7D(148)	11/16/2016	1.0	1.9	ND	0.3	11	1.1 J
	BOP-7D(155)	11/16/2016	0.7	1.3	ND	ND	5.1	1.1 J
	BOP-7(i)	2/4/2016	22	22	3.4	5.6	350	ND
	BOP-7(i)-Dup	2/4/2016	19	20	ND	5.0	350	ND
	BOP-7(i)	5/4/2016	23	25	3.6	7.1	250	0.3
	BOP-7(i)-Dup	5/4/2016	17	21	ND	5.5	250	ND
	BOP-7(i)	8/11/2016	12	14	1.9	3.2	160	ND
	BOP-7(i)-Dup	8/11/2016	9.9	11	1.6	2.6	140	ND
	BOP-7(i)	11/8/2016	16	18	2.2	4.5	230 J	ND
	BOP-7(i)-Dup	11/8/2016	18	19	2.5	4.7	160 J	ND
	D-7(i)	8/2/2016	ND	ND	ND	0.6	1.5	ND
	D-8(i)	2/1/2016	2.2	1.3	0.5	0.9	26	ND
	D-8(i)	8/2/2016	3.0	1.8	0.7	1.3	32	ND
	D-11(i)	8/2/2016	ND	0.3	ND	0.2	2.3	ND
	D-12(i)	2/1/2016	0.7	ND	ND	ND	3.2	ND
	D-12(i)	8/2/2016	0.7	ND	ND	0.3	3.2	ND
	E-2	2/5/2016	0.2	1.0	ND	0.2	1.4	1.1
	E-2	5/5/2016	0.2	1.0	ND	0.2	1.3	1.2
	E-2-Dup	5/5/2016	0.2	1.0	ND	0.3	1.5	1.2
	E-2	8/10/2016	0.4	1.5	ND	0.2	1.8	0.6
	E-2	11/7/2016	0.2	1.3	ND	ND	0.7	0.6 J
	E-2-Dup	11/7/2016	0.2	1.2	ND	ND	0.6	0.6 J
	E-3	2/5/2016	0.6	3.6	ND	ND	1.2	3.5
	E-3	5/5/2016	0.6	3.2	ND	ND	2.1	2.9
	E-3	8/10/2016	ND	ND	ND	ND	ND	ND
	E-3	11/7/2016	1.4	4.0	ND	ND	9.2	2.3 J
	E-4	2/4/2016	4.9	2.1	ND	1.2	26	ND
	E-4	5/5/2016	4.2	1.6	ND	1.2	21	ND
	E-4	8/10/2016	2.9	1.3	ND	0.8	21	ND

TABLE 4-2
GROUNDWATER QUALITY SUMMARY
TGA MONITORING PROGRAM 2016
BOEING PORTLAND

Area	Location	Date	1,1-DCE	cDCE	1,1,1-TCA	PCE	TCE	VC
		MCL:	**7**	**70**	**200**	**5**	**5**	**2**
	E-4	11/7/2016	5.0	1.8	ND	1.1	22	ND
	E-12	2/5/2016	1.6	1.5	ND	0.5	16	0.3
	E-12	5/3/2016	1.7	1.6	ND	0.6	16	0.2
	E-12	8/10/2016	2.1	1.6	ND	0.6	17	ND
	E-12	11/7/2016	2.0	2.0	ND	0.5	17	ND
	E-13	2/1/2016	2.5	1.6	ND	0.4	13	ND
	E-13	5/3/2016	2.3	1.2	ND	0.4	11	ND
	E-13	8/4/2016	2.6	1.4	ND	0.4	12	ND
	E-13	11/7/2016	2.2	1.3	ND	0.4	10	ND
	BOP-22R(ds)	8/8/2016	ND	ND	ND	ND	ND	ND
Former Degreaser Source Area:								
	BOP-72(i)	2/3/2016	ND	2.1	ND	ND	ND	3.2
	BOP-72(i)	5/4/2016	ND	2.2	ND	ND	1.0	2.9
	BOP-72(i)	8/9/2016	ND	6.5	ND	ND	2.7	5.2
	BOP-72(i)	11/10/2016	1.1	14	ND	ND	6.7	3.0
	BOP-73(i)	2/3/2016	ND	2.5	ND	ND	0.4	8.8
	BOP-73(i)	5/4/2016	ND	ND	ND	ND	ND	ND
	BOP-73(i)	8/9/2016	ND	2.7	ND	ND	0.7	2.6
	BOP-73(i)	11/10/2016	ND	5.1	ND	ND	1.5	3.2
	BOP-74(i)	2/3/2016	0.3	11	ND	ND	ND	3.1
	BOP-74(i)	5/4/2016	ND	11	ND	ND	0.2	2.6
	BOP-74(i)	8/9/2016	ND	11	ND	ND	0.2	1.6
	BOP-74(i)	11/10/2016	ND	9.9	ND	ND	0.2	1.3
	BOP-75(i)	2/3/2016	0.3	3.5	ND	ND	1.1	4.3
	BOP-75(i)	5/5/2016	0.4	3.9	ND	ND	2.0	5.4
	BOP-75(i)	8/9/2016	0.3	3.0	ND	ND	1.0	4.7
	BOP-75(i)	11/4/2016	0.5	3.0	ND	ND	6.2	3.4 J
	BOP-76(i)	2/3/2016	0.7	9.8	ND	ND	1.0	1.6
	BOP-76(i)	5/4/2016	0.6	10	ND	ND	0.5	3.8
	BOP-76(i)	8/9/2016	0.5	11	ND	ND	1.1	4.2
	BOP-76(i)	11/10/2016	0.4	7.4	ND	ND	3.5	2.5
	BOP-77(i)	2/3/2016	ND	61	ND	ND	6.2	8.7
	BOP-77(i)	5/4/2016	ND	44	ND	ND	4.9	6.7
	BOP-77(i)	8/9/2016	ND	33	ND	0.4	2.7	2.1
	BOP-77(i)	11/10/2016	ND	15	ND	ND	2.6	1.5
	BOP-78(i)	2/4/2016	ND	4.2	ND	ND	0.3	2.2
	BOP-78(i)	5/5/2016	ND	10	ND	ND	0.4	6.1
	BOP-78(i)	8/8/2016	ND	24	ND	ND	0.9	13
	BOP-78(i)	11/4/2016	ND	12	ND	ND	0.7	7.5 J
	BOP-79(i)	2/4/2016	ND	4.5	ND	ND	0.4	3.5
	BOP-79(i)	5/5/2016	ND	3.6	ND	ND	0.5	3.6
	BOP-79(i)	8/8/2016	ND	4.2	ND	ND	0.7	3.4
	BOP-79(i)	11/4/2016	ND	4.7	ND	ND	0.6	3.7 J
	BOP-80(i)	2/3/2016	ND	ND	ND	ND	ND	0.2
	BOP-80(i)	5/4/2016	ND	ND	ND	ND	ND	0.4
	BOP-80(i)	8/11/2016	ND	0.2	ND	ND	ND	0.7
	BOP-80(i)	11/11/2016	ND	ND	ND	ND	ND	0.3

TABLE 4-2
GROUNDWATER QUALITY SUMMARY
TGA MONITORING PROGRAM 2016
BOEING PORTLAND

Area	Location	Date	1,1-DCE	cDCE	1,1,1-TCA	PCE	TCE	VC
		MCL:	**7**	**70**	**200**	**5**	**5**	**2**
	BOP-81(i)	2/4/2016	ND	ND	ND	ND	ND	ND
	BOP-81(i)	5/4/2016	ND	ND	ND	ND	ND	ND
	BOP-81(i)	8/11/2016	ND	ND	ND	ND	ND	ND
	BOP-81(i)	11/11/2016	ND	ND	ND	ND	ND	0.3
	BOP-82(i)	2/4/2016	0.6	1.4	ND	0.5	8.5	0.4
	BOP-82(i)	5/3/2016	0.6	0.9	ND	0.6	8.3	ND
	BOP-82(i)	8/11/2016	0.7	0.6	ND	0.6	8.7	ND
	BOP-82(i)	11/16/2016	0.7	0.6	ND	0.5	8.7	ND
	BOP-83(i)	2/4/2016	ND	ND	ND	ND	1.7	ND
	BOP-83(i)	5/6/2016	ND	ND	ND	ND	2.4	ND
	BOP-83(i)	8/11/2016	ND	ND	ND	ND	2.6	ND
	BOP-83(i)	11/16/2016	0.6	4.5	ND	0.5	10	ND
	BOP-84(i)	2/4/2016	ND	3.4	ND	ND	ND	2.0
	BOP-84(i)	5/5/2016	ND	3.8	ND	ND	ND	2.2
	BOP-84(i)	8/8/2016	ND	4.6	ND	ND	ND	1.7
	BOP-84(i)	11/4/2016	ND	4.6	ND	ND	ND	1.5 J
	BOP-85(i)	2/4/2016	ND	0.7	ND	ND	ND	0.5
	BOP-85(i)	5/5/2016	ND	1.0	ND	ND	ND	0.9
	BOP-85(i)	8/8/2016	ND	1.3	ND	ND	0.3	0.9
	BOP-85(i)	11/4/2016	ND	1.3	ND	ND	0.3	0.9 J
	BOP-86(i)	2/4/2016	ND	1.9	ND	ND	0.3	2.2
	BOP-86(i)	5/5/2016	ND	2.0	ND	ND	0.4	ND
	BOP-86(i)	8/8/2016	ND	2.5	ND	ND	0.6	1.7
	BOP-86(i)	11/4/2016	ND	2.3	ND	ND	0.6	1.6 J
	BOP-87(i)	2/4/2016	ND	0.5	ND	ND	ND	0.6
	BOP-87(i)	5/5/2016	ND	0.6	ND	ND	0.2	1.0
	BOP-87(i)	8/8/2016	ND	0.9	ND	ND	0.3	0.8
	BOP-87(i)	11/4/2016	ND	1.0	ND	ND	0.3	0.8 J
	BOP-88(i)	2/4/2016	ND	24	ND	ND	1.6	4.1
	BOP-88(i)	5/5/2016	ND	65	ND	ND	3.3	6.8
	BOP-88(i)	8/9/2016	0.2	100	ND	ND	8.9	7.0
	BOP-88(i)	11/8/2016	ND	110 J	ND	ND	6.2 J	7.4 J

Acronyms/Abbreviations:

cDCE = cis-1,2-dichloroethene
1,2-DCE = 1,2-dichloroethene
MCL = Maximum Contaminant Level
ND = Not detected
PCE = tetrachloroethene
trans-1,2-DCE = trans-1,2-dichloroethene
1,1,1-TCA = 1,1,1-trichloroethane
TCE = trichloroethene
TGA = Troutdale Gravel Aquifer
VC = vinyl chloride

Notes:

Results are reported in micrograms per liter (µg/L).

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Boxed value indicates concentration above the MCL.

(a) West Area wells BOP-57(ia, ib) are installed with short (5 ft) screens. BOP-57(ia) is screened at the base of the TGA, while BOP-57(ib) is screened within the first layer of the Confining Unit 1 (CU1).

TABLE 4-3
WATER ANALYTICAL RESULTS
TPH-Dx AND FIELD PARAMETERS FOR
COOLANT RELEASE AREA
BOEING PORTLAND

Location	Laboratory ID	Date Collected Screening Level (b)	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx 1.35	Field Parameters pH	DO (mg/L)	ORP (mV)	Conventionals (mg/L) Nitrate	Sulfate
LAI-1	8510419	8/3/2016	0.095 U	0.24 U	ND	6.20	5.20	85.5	NA	NA
LAI-2	8510420	8/3/2016	0.10 U	0.25 U	ND	6.12	2.88	112.7	NA	NA
LAI-3	8510421	8/3/2016	0.095 U	0.24 U	ND	6.56	3.95	106.9	NA	NA
LAI-4	8234032	2/5/2016	0.25	0.57	0.82	6.87	4.17	115.6	0.55	7.6
LAI-4	8510422	8/4/2016	1.2	2.6	3.8	6.72	1.82	1.5	0.10 U	9.1
LAI-5	8510423	8/4/2016	0.097 U	0.24 U	ND	6.56	4.97	-338.9	NA	NA
LAI-6	8510424	8/4/2016	0.095 U	0.24 U	ND	7.97	5.68	-345.9	NA	NA
LAI-7	8234033	2/5/2016	0.096 U	0.24 U	ND	6.77	5.26	114.9	2.9	16.0
LAI-7	8510425	8/4/2016	0.096 U	0.24 U	ND	6.40	2.43	162.5	3.9	15.0
LAI-8	---	2/5/2016	**Dry in February 2016**							
LAI-8	---	8/4/2016	**Dry in August 2016**							

Acronyms/Abbreviations:
ID = identification
mg/L = milligrams per liter
mV = millivolt
NA = Not analyzed.
ND = Not detected.
ODEQ = Oregon Department of Environmental Quality
ORP = oxygen reduction potential
TPH-Dx = total petroleum hydrocarbons - diesel range
DO = dissolved oxygen

Notes:
U = Indicates compound was analyzed for, but was not detected at the given reporting limit.

Boxed value indicates concentration above the cleanup level.

(a) Samples analyzed after September 27, 2006 had silica gel and acid wash preparation steps conducted.
(b) Site-specific ODEQ Risk-Based cleanup standard based on sum of diesel and motor oil components.

TABLE 4-4
SUB-SLAB VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Date Collected	VOLATILES (Method TO-15)					
		Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cDCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)
	Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000
VP-1 (SG-44)	**Baseline**	29 U	44 U	61 U	44 U	15,000	NA
VP-1	2/2/2016	3.0 U	4.6 U	7.3	4.6 U	1,600	99
	4/7/2016 (b)						
VP-1	5/3/2016	2.7 U	4.2 U	5.8 U	4.2 U	14	18
VP-1	8/5/2016	3.1 U	4.8 U	6.6 U	4.8 U	6.5 U	39
VP-1	11/9/2016	3.0 U	4.7 U	6.5 U	4.7 U	6.4 U	18
VP-2 (SG-34)	**Baseline**	200 U	310 U	NA	1100	280,000	NA
VP-2	2/2/2016	420 U	650 U	890 U	650 U	150,000	2,300
	4/7/2016 (b)						
VP-2	5/3/2016	3.3 U	5.1 U	7.1 U	5.1 U	220	25
VP-2	8/5/2016	3.0 U	4.7 U	6.5 U	4.7 U	64	35
VP-2	11/9/2016	2.8 U	4.4 U	6 U	4.4 U	20	17
VP-3 (SG-42)	**Baseline**	14 U	90	4700	27	7,400	NA
VP-3	2/2/2016	2.9 U	4.5 U	420	4.5 U	100	130
	4/7/2016 (b)						
VP-3	5/3/2016	3.2 U	5.0 U	22	15	11	35
VP-3	8/5/2016	3.0 U	4.6 U	18	4.6 U	7.5	49
VP-3	11/9/2016	2.6 U	4.1 U	11	4.1 U	6.2	26
VP-4 (SG-45)	**Baseline**	290 U	440 U	610 U	660	170,000	NA
VP-4	2/2/2016	3.0 U	4.6 U	16	4.6 U	150	100
	4/7/2016 (b)						
VP-4	5/3/2016	2.6 U	4.1 U	5.6 U	4.1 U	43	37
VP-4	8/5/2016	7.7 U	12 U	16 U	12 U	31	45
VP-4	11/9/2016	2.6 U	4.1 U	5.7 U	4.1 U	19	18
VP-5 (SG-46)	**Baseline**	1100	1700	2400	3800	850,000	NA
VP-5	2/2/2016	250 U	390 U	2,500	390 U	93,000	1700
	4/7/2016 (b)						
VP-5	5/3/2016	2.6 U	4.1 U	5.6 U	4.1 U	200	20
VP-5	8/5/2016	3.3 U	5.1 U	7.0 U	5.1 U	31	30
VP-5	11/9/2016	3.0 U	4.6 U	6.3 U	4.6 U	12	18
VP-6 (SG-1)	**Baseline**	13 U	59	7600	160	3,200	NA
VP-6	2/2/2016	3.0 U	4.6 U	490	15	500	190
	4/7/2016 (b)						
VP-6	5/3/2016	2.8 U	4.3 U	38	4.5	30	49
VP-6	8/5/2016	2.8 U	4.4 U	29	4.4 U	10	68
VP-6	11/9/2016	2.9 U	4.5 U	7.6	4.5 U	6.1 U	54
VP-7 (SG-28B)	**Baseline**	30 U	3200	NA	1900	5,200	NA
VP-7	2/2/2016	7.1 U	120	4,600	120	400	150
	4/7/2016 (b)						
VP-7	5/3/2016	3.3 U	30	1000	36	110	78
VP-7	8/5/2016	2.8 U	25	820	20	78	92
VP-7	11/9/2016	3.0 U	20	600	18	51	64

TABLE 4-4
SUB-SLAB VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cDCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)
	Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000
VP-8 (SG-11)	**Baseline**	100 U	14,273	190,975	7,414	20,743	NA
VP-8	2/2/2016	20 U	460	14,000	260	790	180
	4/7/2016 (b)						
VP-8	5/3/2016	3.1 U	100	2200	36	100	75
VP-8	8/5/2016	7.6 U	110	2800	30	130	100
VP-8R (c)	11/15/2016	3.3 U	20	530	43	47	36
VP-9 (SG-24)	**Baseline**	100 U	103 U	185	103 U	8,007	NA
VP-9	2/2/2016	3.1 U	4.8 U	52	4.8 U	270	130
	4/7/2016 (b)						
VP-9	5/3/2016	2.9 U	4.5 U	14	4.5 U	130	74
VP-9	8/5/2016	3.0 U	4.6 U	8.6	4.6 U	76	58
VP-9	11/9/2016	2.9 U	4.5 U	6.2 U	4.5 U	36	28

Acronyms/Abbreviations:
cDCE = cis-1,2-dichloroethene
1,1-DCE = 1,1-dichloroethene
µg/m3 = micrograms per cubic meter
NA = Not Analyzed
PCE = tetrachloroethene
1,1,1-TCA = 1,1,1-trichloroethane
TCE = trichloroethene
VOC = volatile organic compound

Notes:
U = Indicates the compound was undetected at the reported concentration.
Boxed results are greater than the screening level.
Baseline samples collected during pilot tests.

(a) Soil gas screening levels were developed by the Oregon Department of Environmental Quality (ODEQ) by multiplying the Risk-Based Concentration for air in an occupational setting by an attenuation factor of 1,000 to account for vapor intrusion through building slab. Screening levels updated June 7, 2012.
(b) SVE system was shutdown on 10/9/2015 with ODEQ approval. Resumed operation on 4/7/2016
(c) VP-8R was installed November 15, 2016 to replace VP-8 that was damaged by facilitiy operation.

TABLE 4-5
VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	Cumulative days since startup	Days of Shutdown (since previous sample collection)	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	CDCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)	VOC Removal Rate (lbs/day)	Operational Days (since previous sample collection)	Mass Removal (lbs)
		Screening Level (a)			2,800	880,000	22,000,000		2,900	47,000				
VOW-16	1209159-03A	9/10/2012			4.8 U	7.4 U	190	7.4 U	2,500	480	NA			
VOW-16	1602135-08A	2/2/2016	1233	91	3.0 U	4.7 U	22	4.7 U	130	160	NA	---	0	---
		4/7/2016 (b)												
VOW-16	1605109-11A	5/3/2016	1324	64	2.9 U	4.5 U	6.1 U	4.5 U	6.0 U	67	NA	---	27	---
VOW-16	1608175-11A	8/5/2016	1418	0	2.9 U	4.5 U	6.2 U	4.5 U	6.6	120	NA	---	94	---
VOW-16	1611211-11A	11/9/2016	1514	0	3.2 U	5.0 U	6.8 U	5.0 U	6.7U	64	NA	---	96	---
VOW-17	1209159-05A	9/10/2012			13 U	20 U	87	20 U	8,300	1800	NA			
VOW-17	1602135-09A	2/2/2016	1233	91	54	11	19	160	2,600	210	NA	---	0	---
		4/7/2016 (b)												
VOW-17	1605109-12A	5/3/2016	1324	64	3.2 U	5.0 U	6.9 U	5.0 U	29	20	NA	---	27	---
VOW-17	1608175-12A	8/5/2016	1418	0	2.8 U	4.3 U	6.0 U	4.3 U	7.8	50	NA	---	94	---
VOW-17	1611211-10A	11/9/2016	1514	0	3.1 U	4.8 U	6.5 U	4.8 U	17	22	NA	---	96	---
VOW-18	1209159-01A	9/10/2012			62 U	450	7900	740	31,000	8800	NA			
VOW-18	1602135-10A	2/2/2016	1233	91	3.0 U	4.7 U	200	15	340	360	NA	---	0	---
		4/7/2016 (b)												
VOW-18	1605109-13A	5/3/2016	1324	64	2.9 U	4.6 U	6.3 U	4.6 U	8.6	75	NA	---	27	---
VOW-18	1608175-13A	8/5/2016	1418	0	3.1 U	4.8 U	6.6 U	4.8 U	10	120	NA	---	94	---
VOW-18	1611211-09A	11/9/2016	1514	0	3.0 U	4.7 U	6.4 U	4.7 U	6.3 U	82	NA	---	96	---
BOP-78(i)	1001038-05A	12/28/2009			110 U	410	360	420	88,000	NA	170 U			
	Startup	9/17/2012												
BOP-78(i)	1602135-01A	2/2/2016	1233	91	44	11	40	110	620	200	NA	0.00000	0	0.000
		4/7/2016 (b)												
BOP-78(i)	1605109-04A	5/3/2016	1324	64	2.9 U	4.5 U	6.2 U	4.5 U	45	97	NA	0.0011	27	0.014
BOP-78(i)	1608175-04A	8/5/2016	1418	0	3.1 U	4.8 U	6.6 U	4.8 U	22	140	NA	0.0008	94	0.089
BOP-78(i)	1611211-04A	11/9/2016	1514	0	3.0 U	4.6 U	6.4 U	4.6 U	61	86	NA	0.0006	96	0.079

TABLE 4-5
VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	Cumulative days since startup	Days of Shutdown (since previous sample collection)	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	CDCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)	VOC Removal Rate (lbs/day)	Operational Days (since previous sample collection)	Mass Removal (lbs)
		Screening Level (a)			2,800	880,000	22,000,000		2,900	47,000				
BOP-79(i)	1101028-17A	01/03/2011			3.1 U	90	NA	15	340	NA	10			
	Startup	9/17/2012												
BOP-79(i)	1602135-02A	2/2/2016	1233	91	73	46 U	64 U	46 U	170	110	NA	0.00000	0	0.000
		4/7/2016 (b)												
BOP-79(i)	1605109-05A	5/3/2016	1324	64	3.4 U	5.4 U	7.4 U	5.4 U	7.2 U	57	NA	0.00060	27	0.008
BOP-79(i)	1608175-05A	8/5/2016	1418	0	2.9 U	4.5 U	6.2 U	4.5 U	6.1 U	89	NA	0.00091	94	0.071
BOP-79(i)	611211-05A	11/9/2016	1514	0	3.0 U	4.6 U	6.3 U	4.6 U	6.2 U	52	NA	0.00031	96	0.058
BOP-84(i)	1001038-13A	12/30/2009			5.8 U	9.1 U	12 U	9.1 U	2,400	NA	9.3 U			
	Startup	9/17/2012												
BOP-84(i)	1602135-03A	2/2/2016	1233	91	3.2	4.8 U	23	8.1	930	240	NA	0.00000	0	0.000
		4/7/2016 (b)												
BOP-84(i)	1605109-06A	5/3/2016	1324	64	3.4 U	5.3 U	7.2 U	5.3 U	90	38	NA	0.00114	27	0.015
BOP-84(i)	1608175-06A	8/5/2016	1418	0	2.7 U	4.3 U	5.9 U	4.3 U	28	54	NA	0.00058	94	0.081
BOP-84(i)	1611211-06A	11/9/2016	1514	0	3.1 U	4.8 U	6.5 U	4.8 U	32	32	NA	0.00045	96	0.069
BOP-85(i)	1101028-05A	12/28/2010			37 U	350	NA	400	21,000	NA	72			
	Startup	9/17/2012												
BOP-85(i)	1602135-04A	2/2/2016	1233	91	3.0 U	4.6 U	34	4.6 U	14	330	NA	0.00000	0	0.000
		4/7/2016 (b)												
BOP-85(i)	1605109-07A	5/3/2016	1324	64	2.9 U	4.4 U	6.1 U	4.4 U	140	140	NA	0.00193	27	0.026
BOP-85(i)	1608175-07A	8/5/2016	1418	0	2.8 U	4.3 U	5.9 U	4.3 U	5.8 U	190	NA	0.00102	94	0.138
BOP-85(i)	1611211-07A	11/9/2016	1514	0	3.2 U	4.9 U	6.8 U	4.9 U	11	190	NA	0.00135	96	0.137
BOP-86(i)	1001038-17A	01/02/2010			91 U	510	340	850	52,000	NA	530			
	Startup	9/17/2012												
BOP-86(i)	1602135-05A	2/2/2016	1233	91	2.9 U	4.5 U	17	4.5 U	39	300	NA	0.00000	0	0.000
		4/7/2016 (b)												
BOP-86(i)	1605109-08A	5/3/2016	1324	64	3.2 U	4.9 U	6.7 U	4.9 U	69	58	NA	0.00070	27	0.009
BOP-86(i)	1608175-08A	8/5/2016	1418	0	2.8 U	4.4 U	6.0 U	4.4 U	38	70	NA	0.00091	94	0.076
BOP-86(i)	1611211-08A	11/9/2016	1514	0	3.2 U	4.9 U	6.8 U	4.9 U	28	100	NA	0.00074	96	0.075

TABLE 4-5
VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	Cumulative days since startup	Days of Shutdown (since previous sample collection)	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	CDCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)	VOC Removal Rate (lbs/day)	Operational Days (since previous sample collection)	Mass Removal (lbs)
		Screening Level (a)			2,800	880,000	22,000,000		2,900	47,000				
BOP-87(i)	1602135-06A	2/2/2016	1233	91	3.0 U	5.0	600	7.9	150	230	NA	0.00000	0	0.000
		4/7/2016 (b)												
BOP-87(i)	1605109-09A	5/3/2016	1324	64	3.1 U	4.8 U	10	4.8 U	470	100	NA	0.00373	27	0.050
BOP-87(i)	1608175-09A	8/5/2016	1418	0	3.1 U	4.9 U	8.0	4.9 U	340	180	NA	0.00355	94	0.342
BOP-87(i)	1611211-09A	11/9/2016	1514	0	3.0 U	4.6 U	7.2	4.6 U	230	130	NA	0.00198	96	0.296
BOP-88(i)	1101028B-12A	12/30/2010			150 U	450	NA	230 U	230,000	NA	240 U			
	Startup	9/17/2012												
BOP-88(i)	1602135-07A	2/2/2016	1233	91	2.9 U	6.3	300	4.5 U	80	140	NA	0.00000	0	0.000
		4/7/2016 (b)												
BOP-88(i)	1605109-10A	5/3/2016	1324	64	2.8 U	4.3 U	16	4.3 U	190	80	NA	0.00321	27	0.043
BOP-88(i)	1608175-10A	8/5/2016	1418	0	2.9 U	4.5 U	13	4.5 U	59	120	NA	0.00119	94	0.207
BOP-88(i)	1611211-10A	11/9/2016	1514	0	3.3 U	5.2 U	12	5.2 U	65	73	NA	0.00078	96	0.166

VOC Mass Removed in 2016 (lbs)	2.05
Cumulative VOC Mass Removed Since System Startup (lbs)	12.52

Acronyms/Abbreviations:

CDCE = cis-1,2-dichloroethene
1,1-DCA = 1,1-dichloroethane
1,1-DCE = 1,1-dichloroethene
ID = identification
µg/m3 = micrograms per cubic meter
NA = Not Analyzed
lbs = pounds
PCE = tetrachloroethene
1,1,1-TCA = 1,1,1-trichloroethane
TCE = trichloroethene
SVE = soil vapor extraction
VOC = volatile organic compound

Notes:

U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Boxed results are greater than the screening level.
Baseline samples collected during pilot tests.
--- = Indicates data not available for vapor observation wells.

(a) Soil gas screening levels were developed by the Oregon Department of Environmental Quality (ODEQ) by multiplying the Risk Based Concentration for air in an occupational setting by an attenuation factor of 1,000 to account for vapor intrusion through building slab. Screening levels updated June 7, 2012.
(b) SVE system was shut down on 10/9/2015 with ODEQ approval. Resumed operation on 4/7/2016

TABLE 5-1
SUMMARY OF GROUNDWATER EXTRACTION WELL PERFORMANCE
AVERAGE YIELD, TOTAL GALLONS, AND AVERAGE TOTAL MASS REMOVAL RATES
BOEING PORTLAND

	2012			2013			2014			2015			2016		
Well	Average Extraction Rate (gpm)(a)	Total Gallons	Average Total VOC Mass Removal Rate (lbs/day) (b)	Average Extraction Rate (gpm)(a)	Total Gallons	Average Total VOC Mass Removal Rate (lbs/day) (b)	Average Extraction Rate (gpm)(a)	Total Gallons	Average Total VOC Mass Removal Rate (lbs/day) (b)	Average Extraction Rate (gpm)(a)	Total Gallons	Average Total VOC Mass Removal Rate (lbs/day) (b)	Average Extraction Rate (gpm)(a)	Total Gallons	Average Total VOC Mass Removal Rate (lbs/day) (b)
East Corrective Action Area:															
E-8 (c)	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000
Total East Corrective Action Area		**0.00**	**0.00000**		**0.00**	**0.00000**		**0.00**	**0.00000**		**0.00**	**0.00000**		**0.00**	**0.00000**
East Yard Corrective Action Area:															
E-9 (c)	0.00	0.04	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000
Total East Corrective Action Yard		**0.04**	**0.00000**		**0.00**	**0.00000**		**0.00**	**0.00000**		**0.00**	**0.00000**		**0.00**	**0.00000**
Central Corrective Action Area:															
E-6 (c)	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000
E-7 (c)	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000	0.00	0.00	0.00000
DP-1	2.67	1,480,998	0.00271	3.20	1,692,372	0.00567	2.92	1,425,143	0.00379	2.74	1,311,642	0.00403	2.65	1,376,324	0.00343
Total Central Corrective Action Area		**1,480,998**	**0.00271**		**1,692,372**	**0.00567**		**1,425,143**	**0.00379**		**1,311,642**	**0.00403**		**1,376,324**	**0.00343**
West Corrective Action Area:															
E-5 (c)	0.00	0.0	0.00000	0.00	0.0	0.00000	0.00	0.0	0.00000	0.00	0.0	0.00000	0.00	0.0	0.00000
E-11	0.00	6.8	0.00000	0.00	0.0	0.00000	0.01	1.2	0.00000	0.00	0.0	0.00000	0.00	0.0	0.00000
E-15	0.00	0.0	0.00000	0.50	265,097	0.00006	0.50	220,832	0.00002	0.85	359,157	0.00009	1.03	462,150	0.00012
E-16	0.35	54.1	0.00000	1.08	560,470	0.00020	2.10	956,352	0.00041	0.79	379,722	0.00011	1.67	674,730	0.00018
Total West Corrective Action Area		**61**	**0.00000**		**825,567**	**0.00026**		**1,177,186**	**0.00042**		**738,879**	**0.00019**		**1,136,880**	**0.00030**
Downgradient Corrective Action Area:															
E-2 (d)	8.31	3,844,476	0.00047	11.72	6,178,273	0.00068	15.27	7,484,146	0.00066	6.57	2,758,638	0.00020	0.00	0.0	0.00000
E-3 (d)	4.85	2,419,839	0.00142	3.45	1,889,276	0.00112	3.61	1,652,362	0.00066	1.40	642,354	0.00019	0.00	0.0	0.00000
E-4	2.53	1,493,818	0.00176	1.12	612,010	0.00054	0.92	460,753	0.00037	1.09	523,067	0.00034	1.12	760,673.0	0.00049
E-12	8.63	4,558,174	0.00079	6.53	3,486,614	0.00084	4.63	2,246,832	0.00059	1.45	675,892	0.00020	2.93	1,247,948.0	0.00058
E-13	119.92	65,675,839	0.01484	121.63	65,991,070	0.01729	100.38	49,910,972	0.01246	58.68	29,310,696	0.01067	64.87	32,591,930	0.01156
Total Downgradient Corrective Action Area		**77,992,145**	**0.01929**		**78,157,243**	**0.02049**		**61,755,066**	**0.01474**		**33,910,647**	**0.01159**		**34,600,551**	**0.01263**
Total All TGA Areas: (lbs/day)		**79,473,204**	**0.02200**		**80,675,182**	**0.02642**		**64,357,396**	**0.01896**		**35,961,168**	**0.01581**		**37,113,755**	**0.01636**

Acronyms/Abbreviations:
DCE = dichloroethene
gpm = gallons per minute
ODEQ = Oregon Department of Environmental Quality
lbs = pounds
PCE = tetrachloroethene
TCA = trichloroethane
TCE = trichloroethene
TGA = troutdale Gravel Aquifer
VOC = volatile organic compound

Notes:
(a) Average extraction rate equals the total gallons pumped during the year divided by the number of minutes that the well was actively pumping.
(b) Average total VOC mass removal rate calculated by multiplying the average extraction rate discussed in Section 5.4 by the concentration of total VOCs. Total VOCs include the following constituents: TCA, TCE, total 1,2-DCE, PCE, and 1,1-DCE.
(c) Wells E-5 through E-9 have not been operated since 2002 except for intermittent short periods for sampling and maintenance.
(d) Wells E-2 and E-3 were shut down on July 7, 2015 with ODEQ approval to minimize the amount of bio-solid accumulation.

TABLE 5-2
AVERAGE GROUNDWATER EXTRACTION RATES - GALLONS PER MINUTE
BOEING PORTLAND

PERIOD	E-2	E-3	E-4	E-5	E-6	E-7	E-8	E-9	E-11	E-12	E-13	E-15	E-16	DP-1
1/1/2016	0.00	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	2.90	54.00	0.55	0.10	2.70
2/1/2016	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	2.20	56.00	0.30	0.10	3.00
3/1/2016	0.00	0.00	1.10	0.00	0.00	0.00	0.00	0.00	0.00	1.20	71.20	1.05	3.50	2.95
4/1/2016	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	72.00	1.10	1.60	2.50
5/1/2016	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00	1.13	73.28	1.85	2.85	3.02
6/1/2016	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.72	72.10	1.53	1.64	2.60
7/1/2016	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.9	72.00	1.10	1.50	2.40
8/1/2016	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	4.1	61.00	0.70	1.20	2.47
9/1/2016	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00	0.00	5.29	61.55	0.70	1.44	2.82
10/1/2016	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.00	5.8	58.50	1.08	1.42	2.18
11/1/2016	0.00	0.00	2.77	0.00	0.00	0.00	0.00	0.00	0.00	5.81	59.48	0.95	1.70	2.53
12/1/2016	0.00	0.00	2.68	0.00	0.00	0.00	0.00	0.00	0.00	4.26	56.45	1.00	1.45	2.65

Notes:
Extraction rates are gallons per minute (gpm).
Actual pumping time varies for individual wells.
Well E-10 was abandoned in 3/29/2010.
Well E-14 was abandoned in 4/1/2010.

TABLE 5-3
GROUNDWATER TREATMENT SYSTEM
QUARTERLY EFFLUENT WATER QUALITY SUMMARY
BOEING PORTLAND

Parameter	NPDES Permit Requirement	Units	Effluent Water Quality			
			First Quarter 2/5/2016	Second Quarter 5/6/2016	Third Quarter 8/3/2016	Fourth Quarter 11/7/2016
pH (average)	6.5-8.5	SU	7.12	7.52	7.86	7.00
1,1,1-Trichloroethane	5	µg/L	ND	ND	ND	ND
1,1-Dichloroethene	5	µg/L	ND	ND	ND	ND
1,2-Dichloroethane	5	µg/L	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L	ND	ND	ND	ND
Benzene	5	µg/L	ND	ND	ND	ND
Bromodichloromethane	5	µg/L	ND	ND	ND	ND
Bromoform	5	µg/L	ND	ND	ND	ND
Carbon Tetrachloride	5	µg/L	ND	ND	ND	ND
Chloroform	5	µg/L	ND	ND	ND	ND
Dibromochloromethane	5	µg/L	ND	ND	ND	ND
Ethylbenzene	5	µg/L	ND	ND	ND	ND
Methylene Chloride	5	µg/L	ND	ND	ND	ND
Toluene	5	µg/L	ND	ND	ND	ND
trans-1,2-Dichloroethene	5	µg/L	ND	ND	ND	ND
Trichloroethene	5	µg/L	ND	ND	ND	ND
Vinyl Chloride	1	µg/L	ND	ND	ND	ND
Orthophosphate	N/A	mg/L				
Total Phosphate	N/A	mg/L	ND	ND	ND	ND
Nitrate Nitrogen	N/A	mg/L	2.5	2.4	2.3	2.1 J
Nitrite Nitrogen	N/A	mg/L	ND	ND	ND	ND
Ammonia Nitrogen	N/A	mg/L	ND	ND	ND	ND

Acronyms/Abbreviations:

µg/L = micrograms per liter
mg/L = milligrams per liter
NPDES = National Pollutant Discharge Elimination System
N/A = not applicable
ND = Not Detected
SU = standard unit

Notes:

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)	Elapsed Time from Injection (f) (days)	Volatile Organic Compounds Analytical Results							Aquifer Redox Conditions							
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Source Zone Wells + PRB Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-72(i)	10/19/2010	-16						3.1	28	10	<1.0	<1.0	<2.0	--	--	--	1.2	--	--	--	12.9	--
Monitoring Well	12/6/2010	32						<2.0	3.6	<2.0	<2.0	25	5.4	--	2.81	-26.2	<5.0	3.2	--	--	<5.0	--
BOP-72(i)	2/2/2011	90						<20	<20	<20	<20	--	--	--	--	--	--	--	--	--	--	--
BOP-72(i)	5/5/2011	182						<1.0	<1.0	6.3	<1.0	--	--	--	0.21	163	--	--	--	--	--	--
BOP-72(i)	8/10/2011	279						<1.0	<1.0	10	<1.0	<1.1	<1.2	<1.1	0.26	-151.61	<0.1	2.4	--	--	1.5	--
BOP-72(i)	11/3/2011	364	-55					<1.0	<1.0	3.0	6.8	--	--	--	0.09	-138.8	--	--	--	--	--	--
BOP-72(i)	2/8/2012	461	42					<2.0	<2.0	<2.0	7.5	--	--	--	0.31	-317.5	--	--	--	--	--	--
BOP-72(i)	5/4/2012	547	128					<2.0	<2.0	<2.0	9.0	--	--	--	0.86	-65.7	--	--	--	--	--	--
BOP-72(i)	8/9/2012	644	225	-7				<1.0	<1.0	<1.0	10	--	--	--	--	--	--	--	--	--	--	--
BOP-72(i)	11/8/2012	735	316	84				<0.2	<0.2	0.2	5.1	--	--	--	--	--	--	--	--	--	--	--
BOP-72(i)	2/5/2013	824	405	173				<0.2	<0.2	0.3	3.4	--	--	--	--	--	--	--	--	--	--	--
BOP-72(i)	5/2/2013	910	491	259	-68			<0.2	<0.2	0.2	3.3	--	--	--	--	--	--	--	--	--	--	--
BOP-72(i)	8/6/2013	1006	587	355	28			<0.2	<0.2	0.7	2.7	5.0	<5.0	<5.0	0.58	-148.8	<0.10	3.0	--	--	<5.0	--
BOP-72(i)	11/7/2013	1099	680	448	121			<0.2	<0.2	0.3	1.9	<5.0	<5.0	<5.0	0.62	-113.4	<0.10	2.5	--	--	<1.0	--
BOP-72(i)	2/5/2014	1189	770	538	211			<0.2	<0.2	0.2	1.9	--	--	--	--	--	--	--	--	--	--	--
BOP-72(i)	5/7/2014	1280	861	629	302	-70		<0.2	<0.2	<0.2	1.5	--	--	--	--	--	--	--	--	--	--	--
BOP-72(i)	8/13/2014	1378	959	727	400	28		<0.2	<0.2	0.2	1.1	<5.0	<5.0	<5.0	0.43	68.2	<0.10	3.0	--	--	<1.0	--
BOP-72(i)	11/6/2014	1463	1044	812	485	113		<0.2	<0.2	0.3	1.9	<5.0	<5.0	<5.0	0.26	-147.65	<0.10	3.0	9.75	9.38	2.8	<2.0
BOP-72(i)	2/5/2015	1554	1135	903	576	204		<0.2	<0.2	1.2	3.3	6.2	<5.0	<5.0	0.25	-113.1	<0.10	5.5	17.6	15.0	16.2	<2.0
BOP-72(i)	5/6/2015	1644	1225	993	666	294	-74	<0.2	2.0	5.4	9.1	<5.0	<5.0	<5.0	0.97	-91.2	<0.10	4.5	15.4	14.9	16.8	<2.0
BOP-72(i)	8/10/2015	1740	1321	1089	762	390	22	<0.2	<0.2	0.4	1.9	<5.0	<5.0	<5.0	1.37	-167.7	<0.10	7.0	36.2	29.7	1.1	24.5
BOP-72(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	<0.2	1.1	2.9	<5.0	<5.0	<5.0	1.09	-100.5	<0.10	7.0	18.7	18.3	6.9	<2.0
BOP-72(i)	2/3/2016	1917	1498	1266	939	567	199	<0.2	<0.2	2.1	3.2	<5.0	<5.0	<5.0	1.78	-57.7	<0.10	7.0	25.6	23.8	4.7	<2.0
BOP-72i(i)	5/4/2016	2008	1589	1357	1030	658	290	<0.2	1.0	2.2	2.9	<5.0	<5.0	<5.0	1.59	-119.1	<0.10	7.0	26.9	25.8	9.7	<2.0
BOP-72i(i)	8/9/2016	2105	1686	1454	1127	755	387	<0.2	2.7	6.5	5.2	<5.0	<5.0	<5.0	0.38	-124.8	<0.10	7.0	16.8	16.5	16.5	<2.0
BOP-72i(i)	11/10/2016	2198	1779	1547	1220	848	480	<0.2	6.7	14	3.0	<5.0	<5.0	<5.0	0.70	-38.80	<0.10	7.0	11.7	10.8	17.7	<2.0
BOP-73(i)	10/19/2010	-16						12	560	90	<1.0	<1.0	<2.0	--	--	--	0.7	--	--	--	11	--
Monitoring Well	12/6/2010	32						19	520	59	<2.0	<2.0	<5.0	--	3.20	14.6	1.0	2.8	--	--	10.3	--
BOP-73(i)	2/2/2011	90						37	1000	78	<1.0	--	--	--	0.45	-14.8	--	--	--	--	--	--
BOP-73(i)	5/5/2011	182						43	1200	42	<3.0	--	--	--	0.64	15.6	--	--	--	--	--	--
BOP-73(i)	8/10/2011	279						18	510	48	<1.0	<1.1	<1.2	<1.1	0.54	-24.9	1.0	2.4	--	--	11.8	--
BOP-73(i)	11/3/2011	364						4.7	160	130	<1.0	--	--	--	0.10	-42.9	--	--	--	--	--	--
BOP-73(i)	12/1/2011	392	-27					5.0	180	120	<1.0	<1.1	<1.2	<1.1	--	--	--	--	--	--	9.5	--
BOP-73(i)	1/19/2012	441	22					7.8	240	100	12	--	--	--	0.41	249	0.3	1.8	--	--	8.8	--
BOP-73(i)	2/16/2012	469	50					4.0	190	59	24	<1.1	<1.2	<1.1	0.66	-235.3	0.3	2.2	--	--	11.5	--
BOP-73(i)	3/15/2012	497	78					6.4	290	53	13	<1.1	<1.2	<1.1	0.80	-220	0.8	1.9	--	--	11.2	--
BOP-73(i)	4/17/2012	530	111					26	1400	50	14	<1.1	<1.2	<1.1	1.23	-244.1	1.0	1.5	--	--	10.7	--
BOP-73(i)	6/12/2012	586	167					72	2700	220	45	2.8	<1.2	<1.1	0.70	28.3	0.9	2.0	--	--	9.7	--
BOP-73(i)	8/9/2012	644	225	-7				2.2	180	190	13	--	--	--	--	--	--	--	--	--	--	--
BOP-73(i)	9/18/2012	684	265	33				41	1300	340	38	<5.0	<5.0	<5.0	0.45	-119	0.28	1.6	--	--	8.4	--
BOP-73(i)	11/14/2012	741	322	90				83	2900	110	2.6	<5.0	<5.0	<5.0	0.83	122.5	0.89	0.5	--	--	10.2	--
BOP-73(i)	2/6/2013	825	406	174				13	390	77	4.7	<5.0	<5.0	<5.0	0.52	56.4	0.11	0.5	--	--	8.9	--
BOP-73(i)	5/7/2013	915	496	264	-63			16	11000	6200	380	29	<5.0	<5.0	2.75	-28.6	<0.10	2.0	--	--	7.8	--
BOP-73(i)	8/6/2013	1006	587	355	28			6.5	1800	670	65	27	<5.0	<5.0	0.52	-120.5	<0.10	1.5	--	--	10.2	--
BOP-73(i)	11/7/2013	1099	680	448	121			<4.0	17000	7800	250	30	<5.0	<5.0	1.13	-75.5	<0.10	3.0	--	--	8.6	--
BOP-73(i)	2/20/2014	1204	785	553	226			<40	8400	13000	610	21	<5.0	<5.0	1.23	23.0	<0.10	4.0	--	--	6.9	--
BOP-73(i)	5/8/2014	1281	862	630	303			<20	340	20000	5600	180	<5.0	<5.0	0.50	-43.5	<0.10	2.5	--	--	<1.0	--
BOP-73(i)	8/13/2014	1378	959	727	400	28		<2.0	<2.0	2800	13000	730	<5.0	<5.0	1.14	17.3	<0.10	4.5	--	--	1.4	--
BOP-73(i)	11/6/2014	1463	1044	812	485	113		<0.2	1.7	47	73	210	<5.0	<5.0	0.15	-108.1	<0.10	3.0	16.4	16.1	4.1	<2.0
BOP-73(i)	2/5/2015	1554	1135	903	576	204		<2.0	<2.0	340	720	340	7.1	<5.0	0.45	-103.3	<0.10	5.0	19.3	17.1	1.1	<2.0
BOP-73(i)	5/6/2015	1644	1225	993	666	294	-74	<2.0	<2.0	150	730	160	<5.0	<5.0	1.08	-86.1	<0.10	5.0	22.6	19.5	1.4	<2.0
BOP-73(i)	8/10/2015	1740	1321	1089	762	390	22	<0.2	1.3	24	20	140	<5.0	<5.0	0.66	-200.4	<0.10	7.0	27.0	25.5	4.8	<2.0
BOP-73(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	5.8	92	19	8.7	9.9	<5.0	0.51	-79.6	<0.10	7.0	12.4	11.2	10.9	<2.0
BOP-73(i)	2/3/2016	1917	1498	1266	939	567	199	<0.2	0.4	2.5	8.8	77	72	<5.0	1.11	-45.7	<0.10	7.0	18.7	17.9	2.4	<2.0

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)		Donor Indicators		Molar Fraction					
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Methane (b) (mg/L)	TOC (mg/L)	pH	PCE	TCE	cDCE	VC	Ethene	Ethane
BOP-72(i)	10/19/2010	-16					0.106	1.77		0.06	0.64	0.31	0.00	0.00	0.00
Monitoring Well	12/6/2010	32					0.849	3020	6.88	0.00	0.02	0.00	0.00	0.81	0.16
BOP-72(i)	2/2/2011	90					--	--	--	0.00	0.00	0.00	0.00	--	--
BOP-72(i)	5/5/2011	182					--	--	6.79	0.00	0.00	1.00	0.00	--	--
BOP-72(i)	8/10/2011	279					7.7	263	6.77	0.00	0.00	1.00	0.00	0.00	0.00
BOP-72(i)	11/3/2011	364	-55				--	--	6.71	0.00	0.00	0.22	0.78	--	--
BOP-72(i)	2/8/2012	461	42				--	--	7.46	0.00	0.00	0.00	1.00	--	--
BOP-72(i)	5/4/2012	547	128				--	--	6.69	0.00	0.00	0.00	1.00	--	--
BOP-72(i)	8/9/2012	644	225	-7			--	--	--	0.00	0.00	0.00	1.00	--	--
BOP-72(i)	11/8/2012	735	316	84			--	--	--	0.00	0.00	0.02	0.98	--	--
BOP-72(i)	2/5/2013	824	405	173			--	--	--	0.00	0.00	0.05	0.95	--	--
BOP-72(i)	5/2/2013	910	491	259	-68		--	--	--	0.00	0.00	0.04	0.96	--	--
BOP-72(i)	8/6/2013	1006	587	355	28		13	47.4	6.66	0.00	0.00	0.03	0.19	0.78	0.00
BOP-72(i)	11/7/2013	1099	680	448	121		11	41.7	6.68	0.00	0.00	0.09	0.91	0.00	0.00
BOP-72(i)	2/5/2014	1189	770	538	211		--	--	--	0.00	0.00	0.06	0.94	--	--
BOP-72(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.00	0.00	1.00	--	--
BOP-72(i)	8/13/2014	1378	959	727	400	28	14	36.6	6.12	0.00	0.00	0.10	0.90	0.00	0.00
BOP-72(i)	11/6/2014	1463	1044	812	485	113	14	13.6	6.56	0.00	0.00	0.09	0.91	0.00	0.00
BOP-72(i)	2/5/2015	1554	1135	903	576	204	13	8.6	6.34	0.00	0.00	0.04	0.18	0.77	0.00
BOP-72(i)	5/6/2015	1644	1225	993	666	294	11	6.7	6.33	0.00	0.07	0.26	0.67	0.00	0.00
BOP-72(i)	8/10/2015	1740	1321	1089	762	390	15	161.0	6.45	0.00	0.00	0.12	0.88	0.00	0.00
BOP-72(i)	11/4/2015	1826	1407	1175	848	476	18	3.7	6.54	0.00	0.00	0.20	0.80	0.00	0.00
BOP-72(i)	2/3/2016	1917	1498	1266	939	567	6	3.2	7.23	0.00	0.00	0.30	0.70	0.00	0.00
BOP-72i(i)	5/4/2016	2008	1589	1357	1030	658	16	3.9	6.29	0.00	0.10	0.30	0.60	--	--
BOP-72i(i)	8/9/2016	2105	1686	1454	1127	755	10	<1.0	6.32	0.00	0.12	0.39	0.49	0.00	0.00
BOP-72i(i)	11/10/2016	2198	1779	1547	1220	848	20	2.2	6.34	0.00	0.21	0.59	0.20	0.00	0.00
BOP-73(i)	10/19/2010	-16					0.0599	1.6	--	0.01	0.81	0.18	0.00	0.00	0.00
Monitoring Well	12/6/2010	32					--	2.24	6.94	0.02	0.85	0.13	0.00	0.00	0.00
BOP-73(i)	2/2/2011	90					--	--	6.37	0.03	0.88	0.09	0.00	--	--
BOP-73(i)	5/5/2011	182					--	--	6.29	0.03	0.93	0.04	0.00	--	--
BOP-73(i)	8/10/2011	279					1.01	1.88	6.30	0.02	0.87	0.11	0.00	0.00	0.00
BOP-73(i)	11/3/2011	364					--	--	6.33	0.01	0.47	0.52	0.00	--	--
BOP-73(i)	12/1/2011	392	-27				0.759	1.93	6.71	0.01	0.52	0.47	0.00	0.00	0.00
BOP-73(i)	1/19/2012	441	22				--	9.26	7.04	0.02	0.59	0.33	0.06	--	--
BOP-73(i)	2/16/2012	469	50				1.35	<1.50	7.74	0.01	0.59	0.25	0.16	0.00	0.00
BOP-73(i)	3/15/2012	497	78				0.535	2.14	6.90	0.01	0.74	0.18	0.07	0.00	0.00
BOP-73(i)	4/17/2012	530	111				0.438	<1.50	7.66	0.01	0.92	0.04	0.02	0.00	0.00
BOP-73(i)	6/12/2012	586	167				0.787	1.61	6.37	0.02	0.85	0.09	0.03	0.00	0.00
BOP-73(i)	8/9/2012	644	225	-7			--	219	--	0.00	0.39	0.55	0.06	--	--
BOP-73(i)	9/18/2012	684	265	33			1.6	5.2	6.31	0.02	0.69	0.25	0.04	0.00	0.00
BOP-73(i)	11/14/2012	741	322	90			3.2	<1.0	6.57	0.02	0.93	0.05	0.00	0.00	0.00
BOP-73(i)	2/6/2013	825	406	174			1.4	--	6.26	0.02	0.76	0.20	0.02	0.00	0.00
BOP-73(i)	5/7/2013	915	496	264	-63		2.8	--	6.39	0.00	0.54	0.41	0.04	0.01	0.00
BOP-73(i)	8/6/2013	1006	587	355	28		4.8	2.4	6.18	0.00	0.60	0.31	0.05	0.04	0.00
BOP-73(i)	11/7/2013	1099	680	448	121		1.9	2.0	6.41	0.00	0.60	0.37	0.02	0.00	0.00
BOP-73(i)	2/20/2014	1204	785	553	226		2.6	1.5	6.54	0.00	0.31	0.64	0.05	0.00	0.00
BOP-73(i)	5/8/2014	1281	862	630	303		3.4	7.2	6.92	0.00	0.01	0.68	0.29	0.02	0.00
BOP-73(i)	8/13/2014	1378	959	727	400	28	4.8	32.9	5.87	0.00	0.00	0.11	0.79	0.10	0.00
BOP-73(i)	11/6/2014	1463	1044	812	485	113	5.6	11.9	6.41	0.00	0.00	0.05	0.13	0.82	0.00
BOP-73(i)	2/5/2015	1554	1135	903	576	204	8.4	4.3	6.41	0.00	0.00	0.13	0.42	0.44	0.01
BOP-73(i)	5/6/2015	1644	1225	993	666	294	13	7.2	6.35	0.00	0.00	0.08	0.62	0.30	0.00
BOP-73(i)	8/10/2015	1740	1321	1089	762	390	12	28.4	6.27	0.00	0.00	0.04	0.06	0.90	0.00
BOP-73(i)	11/4/2015	1826	1407	1175	848	476	7.5	5.1	6.36	0.00	0.02	0.49	0.16	0.16	0.17
BOP-73(i)	2/3/2016	1917	1498	1266	939	567	15	9.6	7.18	0.00	0.00	0.00	0.03	0.52	0.45

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)	Elapsed Time from Injection (f) (days)	Volatile Organic Compounds Analytical Results							Aquifer Redox Conditions							
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Source Zone Wells + PRB Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-73i(i)	5/4/2016	2008	1589	1357	1030	658	290	<0.2	<0.2	<0.2	<0.2	22	98	<5.0	0.92	-153.3	<0.10	7.0	26.3	24.0	1.6	<2.0
BOP-73i(i)	8/9/2016	2105	1686	1454	1127	755	387	<0.2	0.7	2.7	2.6	<5.0	54	<5.0	0.26	-124.8	<0.10	7.0	13.4	11.3	8.0	<2.0
BOP-73i(i)	11/10/2016	2198	1779	1547	1220	848	480	<0.2	1.5	5.1	3.2	<5.0	32	<5.0	0.30	-60.1	<0.10	7.0	10.1	10.6	7.3	<2.0
BOP-74(i)	10/19/2010	-16						1.0	38	8.0	<1.0	<1.0	<2.0	--	--	--	0.9	--	--	--	9.1	--
PRB Well	12/6/2010	32						<1.0	24	6.5	<1.0	<1.0	<2.0	--	3.07	53.3	0.2	0.2	--	--	9.9	--
BOP-74(i)	2/2/2011	90						2.6	44	3.8	<1.0	--	--	--	0.42	81.0	--	--	--	--	--	--
BOP-74(i)	5/5/2011	182						2.0	26	8.0	<1.0	--	--	--	0.25	56.5	--	--	--	--	--	--
BOP-74(i)	8/10/2011	279						<1.0	8.9	7.2	<1.0	<1.1	<1.2	<1.1	0.50	-124.9	<0.1	2.0	--	--	6.6	--
BOP-74(i)	11/3/2011	364						<1.0	3.1	16	<1.0	--	--	--	0.10	-21.2	--	--	--	--	--	--
BOP-74(i)	12/1/2011	392	-27					<1.0	8.6	17	<1.0	<1.1	<1.2	<1.1	0.01	-302.2	<0.1	1.6	--	--	6.7	--
BOP-74(i)	1/19/2012	441	22					<1.0	11	18	<1.0	<1.1	1.6	<1.1	0.21	-170	<1.0	2.0	--	--	<1.0	--
BOP-74(i)	2/16/2012	469	50					<1.0	2.4	44	1.6	<1.1	<1.2	<1.1	0.93	-154	<0.5	3.8	--	--	<0.5	--
BOP-74(i)	3/15/2012	497	78					<1.0	1.4	210	3.2	<1.1	<1.2	<1.1	0.10	-244	<0.5	4.8	--	--	<0.5	--
BOP-74(i)	4/17/2012	530	111					<5.0	<5.0	79	50	<1.1	<1.2	<1.1	0.13	-276.9	<0.1	1.8	--	--	0.8	--
BOP-74(i)	6/12/2012	586	167					<1.0	<1.0	1.2	14	<1.1	<1.2	<1.1	0.72	-9.9	<0.1	4.8	--	--	<0.1	--
BOP-74(i)	8/9/2012	644	225	-7				<1.0	<1.0	<1.0	1.9	--	--	--	--	--	--	--	--	--	--	--
BOP-74(i)	9/19/2012	685	266	34				<0.2	4.5	60	2.9	<5.0	<5.0	<5.0	1.20	18.0	<0.10	4.0	--	--	<1.0	--
BOP-74(i)	11/14/2012	741	322	90				<0.2	0.6	6.9	18	<5.0	<7.0	<5.0	5.92	93.6	<0.10	4.0	--	--	<1.0	--
BOP-74(i)	2/6/2013	825	406	174				<0.2	0.5	1.7	2.9	<5.0	<5.0	<5.0	0.28	-21.3	<0.10	5.0	--	--	<1.0	--
BOP-74(i)	5/7/2013	915	496	264	-63			<0.2	4.0	2.7	1.8	<5.0	<5.0	<5.0	1.21	-53.0	<0.10	3.0	--	--	<1.0	--
BOP-74(i)	8/6/2013	1006	587	355	28			<0.2	0.6	14	8.1	<5.0	<5.0	<5.0	2.35	-25.0	<0.10	3.5	--	--	<1.0	--
BOP-74(i)	11/7/2013	1099	680	448	121			<0.2	<0.2	3.6	1.6	7.3	<5.0	<5.0	1.49	95.6	<0.10	3.5	--	--	<1.0	--
BOP-74(i)	2/20/2014	1204	785	553	226			<0.2	<0.2	2.4	0.9	<5.0	5.0	<5.0	0.92	-71.6	<0.10	6.0	--	--	<1.0	--
BOP-74(i)	5/8/2014	1281	862	630	303	-69		<0.2	<0.2	2.8	3.3	5.9	<5.0	<5.0	1.15	-33.7	<0.10	3.0	--	--	<1.0	--
BOP-74(i)	11/6/2014	1463	1044	812	485	113		<0.2	0.3	11	2.1	<5.0	<5.0	<5.0	0.12	-134.5	0.63	7.0	592	578	501	10.5
BOP-74(i)	2/6/2015	1555	1136	904	577	205		<0.2	0.4	15	1.9	<5.0	<5.0	<5.0	0.23	-95.9	0.54	7.0	291	317	626	4.0
BOP-74(i)	5/6/2015	1644	1225	993	666	294	-74	<0.2	0.5	15	1.6	<5.0	<5.0	<5.0	0.79	-107.6	0.27	7.0	228	226	247	9.0
BOP-74(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	<0.2	5.3	2.9	--	--	--	--	--	--	--	--	--	--	--
BOP-74(i)	2/3/2016	1917	1498	1266	939	567	199	<0.2	<0.2	11	3.1	<5.0	<5.0	<5.0	1.68	60.4	<1.0	7.0	964	961	1460	5.1
BOP-74i(i)	5/4/2016	2008	1589	1357	1030	658	290	<0.2	0.2	11	2.6	<5.0	<5.0	<5.0	0.52	-21.6	<1.0	7.0	534.0	482.0	601.0	31.9
BOP-74i(i)	8/9/2016	2105	1686	1454	1127	755	387	<0.2	0.2	11	1.6	<5.0	<5.0	<5.0	--	-36.9	0.45	7.0	443	493	453	5.4
BOP-74i(i)	11/10/2016	2198	1779	1547	1220	848	480	<0.2	0.2	9.9	1.3	<5.0	<5.0	<5.0	0.34	-9.0	0.16	7.0	264	311	225	7.5
BOP-75(i)	2/2/2011	90						2.5	87	11	<1.0	--	--	--	--	--	--	--	--	--	--	--
Upgradient Well	5/5/2011	182						1.1	52	11	<1.0	--	--	--	--	--	--	--	--	--	13.5	--
BOP-75(i)	8/10/2011	279						1.6	59	11	<1.0	<1.1	<1.2	<1.1	1.76	-16.3	1.1	2.4	--	--	--	--
BOP-75(i)	11/3/2011	364	-55					1.2	58	10	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	2/8/2012	461	42					1.3	55	9.7	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	5/4/2012	547	128					<1.0	52	10	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	8/9/2012	644	225	-7				1.6	39	7.2	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	11/8/2012	735	316	84				1.0	35	6.9	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	2/5/2013	824	405	173				1.0	54	9.5	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	5/2/2013	910	491	259				0.8	42	7.5	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	6/17/2013	956	537	305	-22			0.7	35	9.8	<0.2	<5.0	<5.0	<5.0	1.91	73.6	1.7	0.0	--	--	13.6	--
BOP-75(i)	8/6/2013	1006	587	355	28			0.2	1.3	37	0.2	<5.0	<5.0	<5.0	2.32	-159.5	<0.10	3.0	--	--	<1.0	--
BOP-75(i)	11/7/2013	1099	680	448	121			<0.2	2.2	2.4	25	<5.0	<5.0	<5.0	0.77	-167.0	<0.10	3.5	--	--	4.5	--
BOP-75(i)	2/5/2014	1189	770	538	211			<0.2	2.6	1.3	18	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	5/7/2014	1280	861	629	302	-70		<0.2	7.4	2.7	14	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	8/13/2014	1378	959	727	400	28		<0.2	6.2	9.5	10	<5.0	<5.0	<5.0	0.40	-30.2	<0.10	7.0	--	--	27.7	--
BOP-75(i)	11/5/2014	1462	1043	811	484	112		<0.2	<0.2	4.3	11	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	2/6/2015	1555	1136	904	577	205		<0.2	9.1	8.6	4.2	<5.0	<5.0	<5.0	0.26	-117.3	<0.10	--	12.4	10.8	3.4	<2.0
BOP-75(i)	5/4/2015	1642	1223	991	664	292	-74	<0.2	13	6.4	4.3	--	--	--	--	--	--	--	--	--	--	--
BOP-75(i)	8/10/2015	1740	1321	1089	762	390	22	<0.2	1.5	4.2	3.3	<5.0	<5.0	<5.0	0.50	-217.3	<0.10	7.0	196	189	255	10.4
BOP-75(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	0.4	4.7	4.2	--	--	--	--	--	--	--	--	--	--	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

Well	Date	Elapsed Time from Injections (a) (days) Pilot Injection	Elapsed Time from Injection (b) (days) PRB 1st Injection	Elapsed Time from Injection (c) (days) PRB 2nd Injection	Elapsed Time from Injection (d) (days) Source Zone Wells 1st Injection	Elapsed Time from Injection (e) (days) Source Zone Wells + PRB Injection	Donor Indicators Methane (b) (mg/L)	Donor Indicators TOC (mg/L)	Donor Indicators pH	Molar Fraction PCE	Molar Fraction TCE	Molar Fraction cDCE	Molar Fraction VC	Molar Fraction Ethene	Molar Fraction Ethane
BOP-73i(i)	5/4/2016	2008	1589	1357	1030	658	20.0	3.7	6.34	0.00	0.00	0.00	0.00	--	--
BOP-73i(i)	8/9/2016	2105	1686	1454	1127	755	6.8	2.3	6.4	0.00	0.00	0.01	0.02	0.00	0.96
BOP-73i(i)	11/10/2016	2198	1779	1547	1220	848	2.9	2.5	6.39	0.00	0.01	0.04	0.04	0.00	0.90
BOP-74(i)	10/19/2010	-16					0.1	<1.50	--	0.02	0.77	0.22	0.00	0.00	0.00
PRB Well	12/6/2010	32					--	2.79	6.61	0.00	0.73	0.27	0.00	--	--
BOP-74(i)	2/2/2011	90					--	--	6.22	0.04	0.86	0.10	0.00	--	--
BOP-74(i)	5/5/2011	182					--	--	6.23	0.04	0.68	0.28	0.00	0.00	0.00
BOP-74(i)	8/10/2011	279					4.3	2.69	6.42	0.00	0.48	0.52	0.00	0.00	0.00
BOP-74(i)	11/3/2011	364					--	--	6.46	0.00	0.13	0.87	0.00	--	--
BOP-74(i)	12/1/2011	392	-27				1.8	3.03	7.03	0.00	0.27	0.73	0.00	0.00	0.00
BOP-74(i)	1/19/2012	441	22				2.6	1450	5.48	0.00	0.26	0.58	0.00	0.00	0.16
BOP-74(i)	2/16/2012	469	50				6.68	668	5.23	0.00	0.04	0.91	0.05	0.00	0.00
BOP-74(i)	3/15/2012	497	78				8.41	330	6.40	0.00	0.00	0.97	0.02	0.00	0.00
BOP-74(i)	4/17/2012	530	111				8.8	72.0	6.83	0.00	0.00	0.50	0.50	0.00	0.00
BOP-74(i)	6/12/2012	586	167				5.72	67.6	5.78	0.00	0.00	0.05	0.95	0.00	0.00
BOP-74(i)	8/9/2012	644	225	-7			--	--	--	0.00	0.00	0.00	1.00	--	--
BOP-74(i)	9/19/2012	685	266	34			13	1280	4.86	0.00	0.05	0.88	0.07	0.00	0.00
BOP-74(i)	11/14/2012	741	322	90			22	145	5.96	0.00	0.01	0.20	0.79	0.00	0.00
BOP-74(i)	2/6/2013	825	406	174			27	83.7	6.15	0.00	0.06	0.26	0.68	0.00	0.00
BOP-74(i)	5/7/2013	915	496	264	-63		21	128	6.04	0.00	0.35	0.32	0.33	0.00	0.00
BOP-74(i)	8/6/2013	1006	587	355	28		26	669	5.07	0.00	0.02	0.52	0.47	0.00	0.00
BOP-74(i)	11/7/2013	1099	680	448	121		17	330	6.05	0.00	0.00	0.11	0.08	0.81	0.00
BOP-74(i)	2/20/2014	1204	785	553	226		22	66.2	6.37	0.00	0.00	0.12	0.07	0.00	0.81
BOP-74(i)	5/8/2014	1281	862	630	303	-69	19	32.8	6.58	0.00	0.00	0.10	0.18	0.72	0.00
BOP-74(i)	11/6/2014	1463	1044	812	485	113	21	2860	4.16	0.00	0.02	0.76	0.22	0.00	0.00
BOP-74(i)	2/6/2015	1555	1136	904	577	205	21	2230	4.86	0.00	0.02	0.82	0.16	0.00	0.00
BOP-74(i)	5/6/2015	1644	1225	993	666	294		1240	492	0.00	0.02	0.84	0.14	0.00	0.00
BOP-74(i)	11/4/2015	1826	1407	1175	848	476	--	--	--	0.00	0.00	0.54	0.46	--	--
BOP-74(i)	2/3/2016	1917	1498	1266	939	567	21	4200	5.5	0.00	0.00	0.70	0.30	0.00	0.00
BOP-74i(i)	5/4/2016	2008	1589	1357	1030	658	19.0	2480	4.57	0.00	0.01	0.72	0.27	--	--
BOP-74i(i)	8/9/2016	2105	1686	1454	1127	755	18	1840	4.72	0.00	0.01	0.81	0.18	0.00	0.00
BOP-74i(i)	11/10/2016	2198	1779	1547	1220	848	22	1430	4.87	0.00	0.01	0.82	0.17	0.00	0.00
BOP-75(i)	2/2/2011	90					--	--	--	0.02	0.84	0.14	0.00	--	--
Upgradient Well	5/5/2011	182					--	4.77	--	0.01	0.77	0.22	0.00	--	--
BOP-75(i)	8/10/2011	279					<0.0007	--	6.24	0.02	0.78	0.20	0.00	0.00	0.00
BOP-75(i)	11/3/2011	364	-55				--	--	--	0.01	0.80	0.19	0.00	--	--
BOP-75(i)	2/8/2012	461	42				--	--	--	0.01	0.80	0.19	0.00	--	--
BOP-75(i)	5/4/2012	547	128				--	--	--	0.00	0.79	0.21	0.00	--	--
BOP-75(i)	8/9/2012	644	225	-7			--	--	--	0.03	0.78	0.20	0.00	--	--
BOP-75(i)	11/8/2012	735	316	84			--	--	--	0.02	0.78	0.21	0.00	--	--
BOP-75(i)	2/5/2013	824	405	173			--	--	--	0.01	0.80	0.19	0.00	--	--
BOP-75(i)	5/2/2013	910	491	259			--	--	--	0.01	0.80	0.19	0.00	--	--
BOP-75(i)	6/17/2013	956	537	305	-22		<0.005	2.3	6.25	0.01	0.72	0.27	0.00	0.00	0.00
BOP-75(i)	8/6/2013	1006	587	355	28		0.39	51.3	6.43	0.00	0.02	0.96	0.01	0.00	0.00
BOP-75(i)	11/7/2013	1099	680	448	121		12	5.5	6.55	0.00	0.04	0.06	0.91	0.00	0.00
BOP-75(i)	2/5/2014	1189	770	538	211		--	--	--	0.00	0.06	0.04	0.90	--	--
BOP-75(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.18	0.09	0.73	--	--
BOP-75(i)	8/13/2014	1378	959	727	400	28	9.9	258	5.38	0.00	0.15	0.32	0.52	0.00	0.00
BOP-75(i)	11/5/2014	1462	1043	811	484	112	--	--	--	0.00	0.00	0.20	0.80	--	--
BOP-75(i)	2/6/2015	1555	1136	904	577	205	14	3.9	6.11	0.00	0.31	0.39	0.30	0.00	0.00
BOP-75(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	0.42	0.28	0.29	--	--
BOP-75(i)	8/10/2015	1740	1321	1089	762	390	15	1170	5.34	0.00	0.11	0.40	0.49	0.00	0.00
BOP-75(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	0.03	0.41	0.57	--	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)	Elapsed Time from Injection (f) (days)	Volatile Organic Compounds Analytical Results							Aquifer Redox Conditions							
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Source Zone Wells + PRB Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-75(i)	2/3/2016	1917	1498	1266	939	567	199	<0.2	1.1	3.5	4.3	<5.0	<5.0	<5.0	1.51	-65.6	<0.10	7.0	18.7	17.7	5.5	<2.0
BOP-75i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	2.0	3.9	5.4	--	--	--	--	--	--	--	--	--	--	--
BOP-75i(i)	8/9/2016	2105	1686	1454	1127	755	387	<0.2	1.0	3.0	4.7	<5.0	<5.0	<5.0	0.4	-125.9	<0.10	7.0	15.1	13.5	6.0	<2.0
BOP-75i(i)	11/4/2016	2193	1774	1542	1215	843	475	<0.2	6.2	3.0	3.4	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	2/2/2011	90						1.7	8.5	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--
Monitoirng Well	5/5/2011	182						<1.0	6.8	1.2	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	8/10/2011	279						1.2	13	4.6	<1.0	<1.1	<1.2	<1.1	3.59	110	3.8	1.1	--	--	10.2	--
BOP-76(i)	11/3/2011	364	-55					1.4	27	1.6	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	2/8/2012	461	42					<1.0	2.1	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	5/4/2012	547	128					<1.0	9.2	1.5	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	8/9/2012	644	225	-7				1.1	33	2.2	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	11/8/2012	735	316	84				0.8	9.8	1.7	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	2/5/2013	824	405	173				0.8	11	1.5	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	5/2/2013	910	491	259				1.4	22	1.7	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	6/17/2013	956	537	305	-22			1.1	26	1.9	<0.2	<5.0	<5.0	<5.0	1.34	75.5	3.7	0.0	--	--	11.0	--
BOP-76(i)	8/6/2013	1006	587	355	28			<0.2	1.0	100	8.3	<5.0	<5.0	<5.0	2.24	-130.0	<0.10	3.5	--	--	<1.0	--
BOP-76(i)	11/7/2013	1099	680	448	121			2.4	140	37	42	<5.0	<5.0	<5.0	1.51	-204.2	<0.10	3.5	--	--	3.5	--
BOP-76(i)	2/5/2014	1189	770	538	211			1.0	45	5.8	8.5	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	5/7/2014	1280	861	629	302	-70		<0.2	7.2	1.2	4.6	--	--	--	--	--	--	--	--	--	--	--
BOP-76(i)	8/13/2014	1378	959	727	400	28		0.3	13	24	4.1	<5.0	<5.0	<5.0	0.45	1.8	<0.10	7.0	--	--	3.2	--
BOP-76(i)	11/6/2014	1463	1044	812	485	113		<0.2	1.4	9.5	2.1	15	<5.0	<5.0	0.20	-104.7	0.20	1.5	14.4	14.5	3.2	<2.0
BOP-76(i)	2/5/2015	1554	1135	903	576	204		<0.2	1.0	7.0	2.2	30	<5.0	<5.0	0.23	-154.7	0.21	2.75	10.1	8.99	5.1	<2.0
BOP-76(i)	5/7/2015	1645	1226	994	667	295	-73	<0.2	0.6	6.6	3.9	<5.0	<5.0	<5.0	1.52	-124.1	<0.10	4.0	17.0	14	5.5	2.2
BOP-76(i)	8/10/2015	1740	1321	1089	762	390	22	<0.2	2.2	14	2.0	<5.0	<5.0	<5.0	0.43	-190.8	<0.10	7.0	126.0	121	108	6.0
BOP-76(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	0.9	14	2.0	<5.0	<5.0	<5.0	0.83	-86.1	<0.10	7.0	26.2	28	4.0	2.7
BOP-76(i)	2/3/2016	1917	1498	1266	939	567	199	<0.2	1.0	9.8	1.6	<5.0	<5.0	<5.0	1.13	-85.0	<0.10	7.0	14.6	8.01	6.3	3.9
BOP-76i(i)	5/4/2016	2008	1589	1357	1030	658	290	<0.2	0.5	10	3.8	<5.0	<5.0	<5.0	8.65	-227.8	<0.10	7.0	11.7	9.91	4.5	3.1
BOP-76i(i)	8/9/2016	2105	1686	1454	1127	755	387	<0.2	1.1	11	4.2	<5.0	<5.0	<5.0	0.81	-136.0	<0.10	7.0	9.40	7.15	6.7	<2.0
BOP-76i(i)	11/10/2016	2198	1779	1547	1220	848	480	<0.2	3.5	7.4	2.5	<5.0	<5.0	<5.0	0.40	-31.5	<0.10	7.0	9.19	8.88	21.9	<2.0
BOP-77(i)	2/2/2011	90						1.7	88	2.7	<1.0	--	--	--	--	--	--	--	--	--	--	--
Monitoring Well	5/5/2011	182						<1.0	41	3.8	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-77(i)	8/10/2011	279						1.8	17	1.6	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-77(i)	11/3/2011	364						<1.0	11	6.7	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-77(i)	12/1/2011	392	-27					1.1	32	7.1	<1.0	<1.1	<1.2	<1.1	0.0	-274.8	0.2	0.8	--	--	8.4	--
BOP-77(i)	12/28/2011	419	0					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-77(i)	12/28/2011	419	0					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-77(i)	1/19/2012	441	22					<20	21	<20	<20	--	--	--	1.09	-154.4	<1.0	2.1	--	--	4.0	--
BOP-77(i)	2/16/2012	469	50					<1.0	8.4	48	1.8	<1.1	<1.2	<1.1	0.58	-154.4	<0.5	5.0	--	--	<0.5	--
BOP-77(i)	3/15/2012	497	78					<1.0	2.2	120	4.6	<1.1	<1.2	<1.1	0.72	-261.9	<0.5	4.4	--	--	<0.5	--
BOP-77(i)	4/17/2012	530	111					<3.0	<3.0	21	62	<1.1	<1.2	<1.1	0.40	-274.5	<0.1	5.6	--	--	0.6	--
BOP-77(i)	6/12/2012	586	167					<1.0	1.4	1.2	60	<1.1	<1.2	<1.1	0.67	-50.4	<0.1	4.3	--	--	<0.1	--
BOP-77(i)	8/9/2012	644	225					<1.0	<1.0	<1.0	59	--	--	--	--	--	--	--	--	--	--	--
BOP-77(i)	8/16/2012	651	232					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-77(i)	9/18/2012	684	265	33				<4.0	<4.0	28	4.1	<5.0	<5.0	<5.0	0.78	25.8	<0.50	3.8	--	--	6.3	--
BOP-77(i)	11/14/2012	741	322	90				<0.2	17	150	15	<5.0	<6.0	<5.0	1.49	160.5	<1.0	3.5	--	--	<10.0	--
BOP-77(i)	2/6/2013	825	406	174				<0.4	11	31	3.2	5.5	<5.0	<5.0	0.35	6.4	<0.10	2.5	--	--	4.1	--
BOP-77(i)	5/7/2013	915	496	264	-63			<0.2	18	17	11	13	<5.0	<5.0	1.52	-74.9	<0.10	2.5	--	--	<1.0	--
BOP-77(i)	8/6/2013	1006	587	355	28			<0.2	0.7	14	13	8.6	<5.0	<5.0	1.14	-44.3	<0.10	3.5	--	--	<1.0	--
BOP-77(i)	11/7/2013	1099	680	448	121			<0.2	<0.2	9.5	19	22	<5.0	<5.0	0.91	-106.7	<0.10	3.5	--	--	<1.0	--
BOP-77(i)	2/20/2014	1204	785	553	226			<0.2	2.7	6.1	7.6	22	<5.0	<5.0	1.14	-8.9	<0.10	3.5	--	--	<1.0	--
BOP-77(i)	5/8/2014	1281	862	630	303	-69		<0.2	0.2	5.1	14	58	6.4	<5.0	0.76	-16.4	<0.10	3.0	--	--	<1.0	--
BOP-77(i)	8/13/2014	1378	959	727	400	28		<0.2	0.6	81	17	24	<5.0	<5.0	0.88	71.4	<0.50	6.0	--	--	2750	--
BOP-77(i)	11/6/2014	1463	1044	812	485	113		<0.2	2.7	200	24	63	<5.0	<5.0	0.17	-165.75	<0.50	7.0	961	981	1850	11.3

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)		Donor Indicators		Molar Fraction					
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Methane (b) (mg/L)	TOC (mg/L)	pH	PCE	TCE	cDCE	VC	Ethene	Ethane
BOP-75(i)	2/3/2016	1917	1498	1266	939	567	18	2.5	7.26	0.00	0.07	0.32	0.61	0.00	0.00
BOP-75i(i)	5/5/2016	2009	1590	1358	1031	659	--	--	--	0.00	0.11	0.28	0.61	--	--
BOP-75i(i)	8/9/2016	2105	1686	1454	1127	755	18	1.9	6.19	0.00	0.07	0.27	0.66	0.00	0.00
BOP-75i(i)	11/4/2016	2193	1774	1542	1215	843	--	--	--	0.00	0.36	0.23	0.41	0.00	0.00
BOP-76(i)	2/2/2011	90					--	--	--	0.14	0.86	0.00	0.00	--	--
Monitoirng Well	5/5/2011	182					--	--	--	0.00	0.81	0.19	0.00	--	--
BOP-76(i)	8/10/2011	279					<0.0007	2.37	6.20	0.05	0.64	0.31	0.00	0.00	0.00
BOP-76(i)	11/3/2011	364	-55				--	--	--	0.04	0.89	0.07	0.00	--	--
BOP-76(i)	2/8/2012	461	42				--	--	--	0.00	1.00	0.00	0.00	--	--
BOP-76(i)	5/4/2012	547	128				--	--	--	0.00	0.82	0.18	0.00	--	--
BOP-76(i)	8/9/2012	644	225	-7			--	--	--	0.02	0.90	0.08	0.00	--	--
BOP-76(i)	11/8/2012	735	316	84			--	--	--	0.05	0.77	0.18	0.00	--	--
BOP-76(i)	2/5/2013	824	405	173			--	--	--	0.05	0.80	0.15	0.00	--	--
BOP-76(i)	5/2/2013	910	491	259			--	--	--	0.04	0.87	0.09	0.00	--	--
BOP-76(i)	6/17/2013	956	537	305	-22		<0.005	1.6	6.18	0.03	0.88	0.09	0.00	0.00	0.00
BOP-76(i)	8/6/2013	1006	587	355	28		3.4	111	6.14	0.00	0.01	0.88	0.11	0.00	0.00
BOP-76(i)	11/7/2013	1099	680	448	121		11	6.9	6.44	0.01	0.50	0.18	0.31	0.00	0.00
BOP-76(i)	2/5/2014	1189	770	538	211		--	--	--	0.01	0.63	0.11	0.25	--	--
BOP-76(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.39	0.09	0.52	--	--
BOP-76(i)	8/13/2014	1378	959	727	400	28	7.6	170	5.27	0.00	0.24	0.60	0.16	0.00	0.00
BOP-76(i)	11/6/2014	1463	1044	812	485	113	21	51.2	5.88	0.00	0.02	0.14	0.05	0.79	0.00
BOP-76(i)	2/5/2015	1554	1135	903	576	204	19	12.7	6.08	0.00	0.01	0.06	0.03	0.90	0.00
BOP-76(i)	5/7/2015	1645	1226	994	667	295	20	7.5	6.14	0.00	0.03	0.50	0.46	0.00	0.00
BOP-76(i)	8/10/2015	1740	1321	1089	762	390	12	659	5.54	0.00	0.09	0.75	0.17	0.00	0.00
BOP-76(i)	11/4/2015	1826	1407	1175	848	476	15	115	6.15	0.00	0.04	0.79	0.17	0.00	0.00
BOP-76(i)	2/3/2016	1917	1498	1266	939	567	16	5.0	7.16	0.00	0.06	0.75	0.19	0.00	0.00
BOP-76i(i)	5/4/2016	2008	1589	1357	1030	658	18	26.4	6.15	0.00	0.02	0.61	0.36	--	--
BOP-76i(i)	8/9/2016	2105	1686	1454	1127	755	14	7.8	6.1	0.00	0.04	0.60	0.36	0.00	0.00
BOP-76i(i)	11/10/2016	2198	1779	1547	1220	848	14	3.4	6.14	0.00	0.19	0.53	0.28	0.00	0.00
BOP-77(i)	2/2/2011	90					--	--	--	0.01	0.95	0.04	0.00	--	--
Monitoring Well	5/5/2011	182					--	--	--	0.00	0.89	0.11	0.00	--	--
BOP-77(i)	8/10/2011	279					--	--	--	0.07	0.83	0.11	0.00	--	--
BOP-77(i)	11/3/2011	364					--	--	--	0.00	0.55	0.45	0.00	--	--
BOP-77(i)	12/1/2011	392	-27				<0.0007	2.41	6.77	0.02	0.75	0.23	0.00	0.00	0.00
BOP-77(i)	12/28/2011	419	0				--	12100	--	--	--	--	--	--	--
BOP-77(i)	12/28/2011	419	0				--	13800	--	--	--	--	--	--	--
BOP-77(i)	1/19/2012	441	22				--	3800	5.40	0.00	1.00	0.00	0.00	--	--
BOP-77(i)	2/16/2012	469	50				6.6	884	5.69	0.00	0.11	0.84	0.05	0.00	0.00
BOP-77(i)	3/15/2012	497	78				10	148	6.96	0.00	0.01	0.93	0.06	0.00	0.00
BOP-77(i)	4/17/2012	530	111				12.2	208	7.12	0.00	0.00	0.18	0.82	0.00	0.00
BOP-77(i)	6/12/2012	586	167				0.314	314	6.36	0.00	0.01	0.01	0.98	0.00	0.00
BOP-77(i)	8/9/2012	644	225				--	--	--	0.00	0.00	0.00	1.00	--	--
BOP-77(i)	8/16/2012	651	232				--	23,800	--	--	--	--	--	--	--
BOP-77(i)	9/18/2012	684	265	33			9.2	4670	4.66	0.00	0.00	0.81	0.19	0.00	0.00
BOP-77(i)	11/14/2012	741	322	90			22	2270	5.66	0.00	0.07	0.81	0.13	0.00	0.00
BOP-77(i)	2/6/2013	825	406	174			15	1136	5.76	0.00	0.13	0.49	0.08	0.30	0.00
BOP-77(i)	5/7/2013	915	496	264	-63		23	112	6.15	0.00	0.14	0.184	0.185	0.49	0.00
BOP-77(i)	8/6/2013	1006	587	355	28		17	888	5.38	0.00	0.01	0.217	0.313	0.46	0.00
BOP-77(i)	11/7/2013	1099	680	448	121		20	111	6.21	0.00	0.00	0.083	0.256	0.66	0.00
BOP-77(i)	2/20/2014	1204	785	553	226		19	40	6.29	0.00	0.02	0.064	0.123	0.79	0.00
BOP-77(i)	5/8/2014	1281	862	630	303	-69	23	36.4	6.41	0.00	0.00	0.021	0.088	0.81	0.08
BOP-77(i)	8/13/2014	1378	959	727	400	28	15	10100	4.32	0.00	0.00	0.42	0.138	0.43	0.00
BOP-77(i)	11/6/2014	1463	1044	812	485	113	22	4920	4.13	0.00	0.00	0.44	0.081	0.48	0.00

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)	Elapsed Time from Injection (f) (days)	Volatile Organic Compounds Analytical Results							Aquifer Redox Conditions							
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Source Zone Wells + PRB Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-77(i)	2/6/2015	1555	1136	904	577	205		<0.2	4.2	120	24	58	<5.0	<5.0	0.83	-38.7	<0.50	7.0	727	596	855	4.0
BOP-77(i)	5/6/2015	1644	1225	993	666	294	-74	<0.2	6.2	220	20	47	5.6	<5.0	0.98	-85.9	1.0	7.0	541	536	519	9.5
BOP-77(i)	8/10/2015	1740	1321	1089	762	390	22	<0.2	6.2	86	11	75	6.8	<5.0	0.94	-73.3	<1.0	7.0	2120	2080	3830	4.1
BOP-77(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	8.2	72	13	22	5.1	<5.0	0.59	34.5	<5.0	7.0	1580	1510	2860	12.3
BOP-77(i)	2/3/2016	1917	1498	1266	939	567	199	<0.2	6.2	61	8.7	16	5.0	<5.0	1.87	35.2	<1.0	--	1100	1100	1530	2.4
BOP-77i(i)	5/4/2016	2008	1589	1357	1030	658	290	<0.2	4.9	44	6.7	21.0	18.0	<5.0	0.73	-103.0	<1.0	7.0	582.0	607	892.0	13.0
BOP-77i(i)	8/9/2016	2105	1686	1454	1127	755	387	0.4	2.7	33	2.1	<5.0	6.0	<5.0	0.22	-88.5	0.51	7.0	289	282	165	9.2
BOP-77i(i)	11/10/2016	2198	1779	1547	1220	848	480	<0.2	2.6	15	1.5	8.5	<5.0	<5.0	0.35	-36.3	0.13	7.0	78.0	76.7	5.3	<2.0
BOP-78(i)	11/21/2011	382	-37					1.7	37	6.1	<1.0	--	--	--	--	--	--	--	--	--	--	--
Injection Well	8/9/2012	644	225	-7				1.1	30	9.3	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	11/8/2012	735	316	84				<0.2	0.3	7.2	51	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	2/6/2013	825	406	174				<0.2	0.3	11	78	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	5/2/2013	910	491	259	-68			<0.2	0.3	0.6	19	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	8/7/2013	1007	588	356	29			0.2	5.5	120	98	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	11/8/2013	1100	681	449	122			<0.2	<0.2	1.1	17	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	2/5/2014	1189	770	538	211			<0.2	1.0	1.3	3.0	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	5/7/2014	1280	861	629	302	-70		<0.2	3.6	2.7	1.7	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	11/5/2014	1462	1043	811	484	112		<0.2	1.7	23	2.6	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	2/5/2015	1554	1135	903	576	204		<0.2	3.2	12	1.8	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	5/4/2015	1642	1223	991	664	292	-76	<0.2	1.0	7.8	2.4	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	0.2	3.1	1.4	--	--	--	--	--	--	--	--	--	--	--
BOP-78(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	0.3	4.2	2.2	--	--	--	--	--	--	--	--	--	--	--
BOP-78i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	0.4	10	6.1	--	--	--	--	--	--	--	--	--	--	--
BOP-78i(i)	8/8/2016	2104	1685	1453	1126	754	386	<0.2	0.9	24	13	--	--	--	--	--	--	--	--	--	--	--
BOP-78i(i)	11/4/2016	2193	1774	1542	1215	843	475	<0.2	0.7	12	7.5	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	11/21/2011	382	-37					1.8	42	5.0	<1.0	--	--	--	--	--	--	--	--	--	--	--
Injection Well	8/9/2012	644	225	-7				2.2	95	12	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	11/8/2012	735	316	84				<0.2	0.2	3.7	68	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	2/6/2013	825	406	174				<0.2	0.2	0.6	5.7	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	5/2/2013	910	491	259	-68			<0.2	0.4	24	41	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	8/7/2013	1007	588	356	29			<0.2	1.0	37	20	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	11/8/2013	1100	681	449	122			<0.2	1.9	13	16	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	2/5/2014	1189	770	538	211			<0.2	3.4	17	7.2	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	5/7/2014	1280	861	629	302	-70		0.9	58	43	15	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	11/7/2014	1464	1045	813	486	114		<0.2	1.5	21	5.6	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	2/5/2015	1554	1135	903	576	204		<0.2	2.1	10	3.8	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	5/4/2015	1642	1223	991	664	292	-76	<0.2	0.4	2.2	2.0	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	0.5	8.6	4.3	--	--	--	--	--	--	--	--	--	--	--
BOP-79(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	0.4	4.5	3.5	--	--	--	--	--	--	--	--	--	--	--
BOP-79i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	0.5	3.6	3.6	--	--	--	--	--	--	--	--	--	--	--
BOP-79i(i)	8/8/2016	2104	1685	1453	1126	754	386	<0.2	0.7	4.2	3.4	--	--	--	--	--	--	--	--	--	--	--
BOP-79i(i)	11/4/2016	2193	1774	1542	1215	843	475	<0.2	0.6	4.7	3.7	--	--	--	--	--	--	--	--	--	--	--
BOP-80(i)	11/21/2011	382						<1.0	2.4	7.0	7.0	--	--	--	--	--	--	--	--	--	--	--
Downgradient Well	12/1/2011	392	-27					<1.0	15	6.1	5.3	2.9	<1.2	<1.1	0.0	-272.8	<0.1	2.4	--	--	3.8	--
BOP-80(i)	1/9/2012	431	12					<1.0	<1.0	<1.0	1.4	--	--	--	0.15	-255	0.2	1.7	--	--	0.4	--
BOP-80(i)	2/16/2012	469	50					<1.0	<1.0	<1.0	<1.0	<1.1	2.2	<1.1	0.29	-237	0.1	2.7	--	--	2.4	--
BOP-80(i)	3/15/2012	497	78					<1.0	<1.0	<1.0	1.7	1.6	2.4	<1.1	0.43	-241	<0.1	4.0	--	--	0.5	--
BOP-80(i)	4/17/2012	530	111					<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	<1.1	0.28	-263.4	<0.1	3.6			1.0	
BOP-80(i)	6/12/2012	586	167	-65				<1.0	<1.0	<1.0	1.7	2.9	4.4	<1.1	0.24	12.8	<0.1	2.3	--	--	0.1	--
BOP-80(i)	9/18/2012	684	265	33				2.0	160	35	14	<5.0	7.1	<5.0	0.28	-160.1	<0.10	2.9	--	--	1.9	--
BOP-80(i)	11/14/2012	741	322	90				3.0	610	240	33	<5.0	6.1	<5.0	1.47	76.0	<0.10	2.5	--	--	3.1	--
BOP-80(i)	2/6/2013	825	406	174				<0.2	1.4	<0.2	0.4	<5.0	5.2	<5.0	0.40	-7.0	0.15	3.0	--	--	<1.0	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)		Donor Indicators		Molar Fraction					
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Methane (b) (mg/L)	TOC (mg/L)	pH	PCE	TCE	cDCE	VC	Ethene	Ethane
BOP-77(i)	2/6/2015	1555	1136	904	577	205	26	4330	4.78	0.00	0.01	0.33	0.103	0.56	0.00
BOP-77(i)	5/6/2015	1644	1225	993	666	294	19	3030	4.84	0.00	0.01	0.50	0.071	0.37	0.04
BOP-77(i)	8/10/2015	1740	1321	1089	762	390	15	9110	4.30	0.00	0.01	0.22	0.04	0.67	0.06
BOP-77(i)	11/4/2015	1826	1407	1175	848	476	15	6350	4.55	0.00	0.03	0.38	0.11	0.40	0.09
BOP-77(i)	2/3/2016	1917	1498	1266	939	567	20	4650	5.80	0.00	0.03	0.41	0.09	0.37	0.11
BOP-77i(i)	5/4/2016	2008	1589	1357	1030	658	17.0	2990	4.71	0.00	0.02	0.23	0.06	0.38	0.31
BOP-77i(i)	8/9/2016	2105	1686	1454	1127	755	16	1450	4.99	0.00	0.03	0.57	0.056	0.00	0.33
BOP-77i(i)	11/10/2016	2198	1779	1547	1220	848	29	265	5.53	0.00	0.04	0.31	0.048	0.60	0.00
BOP-78(i)	11/21/2011	382	-37				--	--	--	0.03	0.79	0.18	0.00	--	--
Injection Well	8/9/2012	644	225	-7			--	--	--	0.02	0.69	0.29	0.00	--	--
BOP-78(i)	11/8/2012	735	316	84			--	--	--	0.00	0.00	0.08	0.91	--	--
BOP-78(i)	2/6/2013	825	406	174			--	--	--	0.00	0.00	0.08	0.92	--	--
BOP-78(i)	5/2/2013	910	491	259	-68		--	--	--	0.00	0.01	0.02	0.97	--	--
BOP-78(i)	8/7/2013	1007	588	356	29		--	--	--	0.00	0.01	0.43	0.55	--	--
BOP-78(i)	11/8/2013	1100	681	449	122		--	--	--	0.00	0.00	0.04	0.96	--	--
BOP-78(i)	2/5/2014	1189	770	538	211		--	--	--	0.00	0.11	0.19	0.70	--	--
BOP-78(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.33	0.34	0.33	--	--
BOP-78(i)	11/5/2014	1462	1043	811	484	112	--	--	--	0.00	0.04	0.81	0.14	--	--
BOP-78(i)	2/5/2015	1554	1135	903	576	204	--	--	--	0.00	0.14	0.70	0.16	--	--
BOP-78(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	0.06	0.64	0.30	--	--
BOP-78(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	0.03	0.57	0.40	--	--
BOP-78(i)	2/4/2016	1918	1499	1267	940	568	--	--	--	0.00	0.03	0.54	0.44	--	--
BOP-78i(i)	5/5/2016	2009	1590	1358	1031	659	--	--	--	0.00	0.01	0.51	0.48	--	--
BOP-78i(i)	8/8/2016	2104	1685	1453	1126	754	--	--	--	0.00	0.01	0.54	0.45	--	--
BOP-78i(i)	11/4/2016	2193	1774	1542	1215	843	--			0.00	0.02	0.50	0.48	--	--
BOP-79(i)	11/21/2011	382	-37				--	--	--	0.03	0.84	0.13	0.00	--	--
Injection Well	8/9/2012	644	225	-7			--	--	--	0.02	0.84	0.14	0.00	--	--
BOP-79(i)	11/8/2012	735	316	84			--	--	--	0.00	0.00	0.03	0.96	--	--
BOP-79(i)	2/6/2013	825	406	174			--	--	--	0.00	0.02	0.06	0.92	--	--
BOP-79(i)	5/2/2013	910	491	259	-68		--	--	--	0.00	0.00	0.27	0.72	--	--
BOP-79(i)	8/7/2013	1007	588	356	29		--	--	--	0.00	0.01	0.54	0.45	--	--
BOP-79(i)	11/8/2013	1100	681	449	122		--	--	--	0.00	0.04	0.33	0.63	--	--
BOP-79(i)	2/5/2014	1189	770	538	211		--	--	--	0.00	0.08	0.55	0.36	--	--
BOP-79(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.39	0.39	0.21	--	--
BOP-79(i)	11/7/2014	1464	1045	813	486	114	--	--	--	0.00	0.04	0.68	0.28	--	--
BOP-79(i)	2/5/2015	1554	1135	903	576	204	--	--	--	0.00	0.09	0.57	0.34	--	--
BOP-79(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	0.05	0.39	0.55	--	--
BOP-79(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	0.02	0.55	0.43	--	--
BOP-79(i)	2/4/2016	1918	1499	1267	940	568	--	--	--	0.00	0.03	0.44	0.53	--	--
BOP-79i(i)	5/5/2016	2009	1590	1358	1031	659	--	--	--	0.00	0.04	0.38	0.58	--	--
BOP-79i(i)	8/8/2016	2104	1685	1453	1126	754	--	--	--	0.00	0.05	0.42	0.53	--	--
BOP-79i(i)	11/4/2016	2193	1774	1542	1215	843	--	--	--	0.00	0.04	0.43	0.53	--	--
BOP-80(i)	11/21/2011	382					--	--	--	0.00	0.09	0.36	0.55	--	--
Downgradient Well	12/1/2011	392	-27				3.97	2.43	6.74	0.00	0.31	0.17	0.23	0.28	0.00
BOP-80(i)	1/9/2012	431	12				--	4.93	6.80	0.00	0.00	0.00	1.00	--	--
BOP-80(i)	2/16/2012	469	50				7.44	3.28	7.14	0.00	0.00	0.00	0.00	0.00	1.00
BOP-80(i)	3/15/2012	497	78				7.98	4.72	6.99	0.00	0.00	0.00	0.17	0.35	0.49
BOP-80(i)	4/17/2012	530	111				12.8	2.89	7.04	0.00	0.00	0.00	0.00	0.00	0.00
BOP-80(i)	6/12/2012	586	167	-65			10.4	2.50	6.01	0.00	0.00	0.00	0.10	0.37	0.53
BOP-80(i)	9/18/2012	684	265	33			14	13.9	6.35	0.01	0.59	0.18	0.11	0.00	0.12
BOP-80(i)	11/14/2012	741	322	90			7.5	1.5	6.48	0.00	0.59	0.31	0.07	0.00	0.03
BOP-80(i)	2/6/2013	825	406	174			23	1.2	6.44	0.00	0.06	0.00	0.03	0.00	0.91

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)	Elapsed Time from Injection (f) (days)	Volatile Organic Compounds Analytical Results							Aquifer Redox Conditions							
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Source Zone Wells + PRB Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-80(i)	5/9/2013	917	498	266	-61			<0.2	0.8	<0.2	0.7	<5.0	12	<5.0	0.57	-13.5	0.11	2.5	--	--	<1.0	--
BOP-80(i)	8/19/2013	1019	600	368	41			<0.2	<0.2	<0.2	0.4	<5.0	9.7	<5.0	1.16	-54.0	0.36	2.5	--	--	2.3	--
BOP-80(i)	11/11/2013	1103	684	452	125			<0.2	<0.2	<0.2	0.2	<5.0	14	<5.0	0.57	-64.8	<0.10	4.5	--	--	<1.0	--
BOP-80(i)	2/21/2014	1205	786	554	227			2.7	23	0.4	<0.2	<5.0	<5.0	<5.0	2.59	114.5	3.8	0.5	--	--	17.6	--
BOP-80(i)	5/7/2014	1280	861	629	302	-70		<0.2	2.0	<0.2	<0.2	<0.5	17	<5.0	1.19	-26.0	0.19	2.5	--	--	1.0	--
BOP-80(i)	8/14/2014	1379	960	728	401	29		<0.2	0.5	1.1	3.1	<5.0	9.0	<5.0	1.14	-113.5	0.29	4.0	--	--	293	--
BOP-80(i)	11/6/2014	1463	1044	812	485	113		0.8	65	360	63	<5.0	<5.0	<5.0	0.45	-74.0	<0.10	2.5	11.8	4.21	10.9	<2.0
BOP-80(i)	2/6/2015	1555	1136	904	577	205		<0.2	<0.2	<0.2	0.3	<5.0	5.6	<5.0	0.30	-121.9	<0.10	7.0	12.5	12.6	1.4	<2.0
BOP-80(i)	5/6/2015	1644	1225	993	666	294	-74	<0.2	<0.2	0.2	0.6	<5.0	15	<5.0	1.54	-73.2	<0.10	4.0	18.0	11.9	<1.0	<2.0
BOP-80(i)	8/10/2015	1740	1321	1089	762	390	22	3.0	91	430	11	<5.0	<5.0	<5.0	0.30	-171.0	<0.10	7.0	10.0	5.59	8.2	<2.0
BOP-80(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	<0.2	0.5	2.1	<5.0	8.9	<5.0	1.20	-58.7	<0.10	7.0	15.6	11.9	1.6	<2.0
BOP-80(i)	2/3/2016	1917	1498	1266	939	567	199	<0.2	<0.2	<0.2	0.2	<5.0	<5.0	<5.0	2.00	-24.2	<0.10	5.0	12.9	7.57	1.4	<2.0
BOP-80i(i)	5/4/2016	2009	1590	1358	1031	659	291	<0.2	<0.2	<0.2	0.4	<5.0	6.7	<5.0	0.90	-33.2	<0.10	7.0	27.2	9.5	<1.0	<2.0
BOP-80i(i)	8/11/2016	2107	1688	1456	1129	757	389	<0.2	<0.2	0.2	0.7	<5.0	9.0	<5.0	0.19	-97.5	<0.10	7.0	12.1	10.9	<1.0	<2.0
BOP-80i(i)	11/11/2016	2199	1780	1548	1221	849	481	<0.2	<0.2	<0.2	0.3	<5.0	10	<5.0	0.68	-9.2	<0.10	7.0	12.7	12.2	<1.0	<2.0
BOP-81(i)	11/21/2011	382						<1.0	<1.0	1.6	6.2	--	--	--	--	--	--	--	--	--	--	--
Downgradient Well	12/1/2011	392	-27					<1.0	<1.0	1.0	4.1	2.0	2.2	<1.1	0.0	-279.8	<0.1	1.1	--	--	0.5	--
BOP-81(i)	12/28/2011	419	0					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-81(i)	1/9/2012	431	12					<1.0	<1.0	<1.0	1.9	--	--	--	0.33	-238.4	0.2	1.5	--	--	0.5	--
BOP-81(i)	2/16/2012	469	50					<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	<1.1	0.23	-242.8	<0.1	1.9	--	--	0.5	--
BOP-81(i)	3/15/2012	497	78					<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	<1.1	0.31	-245.8	0.1	2.7	--	--	0.3	--
BOP-81(i)	4/17/2012	530	111					<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	<1.1	0.28	-270.8	<0.1	2.6	--	--	0.2	--
BOP-81(i)	6/12/2012	586	167	-65				<1.0	<1.0	<1.0	<1.0	<1.1	1.8	<1.1	0.36	-1.8	<0.1	4.3	--	--	<0.1	--
BOP-81(i)	8/16/2012	651	232	0				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-81(i)	9/18/2012	684	265	33				<0.2	<0.2	<0.2	0.6	<5.0	8.4	<5.0	0.21	-125	<0.10	1.7	--	--	<1.0	--
BOP-81(i)	11/14/2012	741	322	90				<0.2	<0.2	<0.2	0.5	<5.0	8.6	<5.0	0.60	42.7	0.11	2.0	--	--	1.4	--
BOP-81(i)	2/6/2013	825	406	174				<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<5.0	0.56	-93.4	0.12	2.0	--	--	2.0	--
BOP-81(i)	5/9/2013	917	498	266	-61			<0.2	0.3	<0.2	0.5	<5.0	<5.0	<5.0	2.65	-18.1	0.39	1.5	--	--	7.4	--
BOP-81(i)	8/19/2013	1019	600	368	41			<0.2	<0.2	<0.2	0.9	<5.0	<5.0	<5.0	3.96	-24.4	1.2	0.0	--	--	16.4	--
BOP-81(i)	11/11/2013	1103	684	452	125			<0.2	<0.2	<0.2	0.4	<5.0	8.9	<5.0	0.42	-75.1	0.26	4.5	--	--	3.8	--
BOP-81(i)	2/21/2014	1205	786	554	227			0.6	0.6	<0.2	<0.2	<5.0	<5.0	<5.0	3.55	74.1	0.61	0.5	--	--	13.5	--
BOP-81(i)	5/7/2014	1280	861	629	302	-70		<0.2	0.2	<0.2	<0.2	<5.0	5.2	<5.0	0.65	-49.9	<0.10	2.0	--	--	2.3	--
BOP-81(i)	8/14/2014	1379	960	728	401	29		<0.2	<0.2	<0.2	0.4	<5.0	6.0	<5.0	1.17	-140.9	<0.10	4.5	--	--	49.7	--
BOP-81(i)	11/6/2014	1463	1044	812	485	113		<0.2	<0.2	<0.2	0.3	<5.0	11	<5.0	0.50	-85.6	<0.10	2.5	21.4	10.9	<1.0	<2.0
BOP-81(i)	2/6/2015	1555	1136	904	577	205		<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<5.0	0.10	-128.8	<0.10	5.0	10.1	3.71	6.7	<2.0
BOP-81(i)	5/6/2015	1644	1225	993	666	294	-74	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<5.0	0.82	-74.0	<0.10	7.0	11.6	4.58	2.5	<2.0
BOP-81(i)	8/11/2015	1741	1322	1090	763	391	23	<0.2	<0.2	0.6	1.2	<5.0	<5.0	<5.0	1.49	-130.0	0.14	7.0	33.5	9.9	4.2	<2.0
BOP-81(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	<0.2	0.3	0.7	<5.0	5.4	<5.0	0.54	-42.6	<0.10	6.5	29.2	10.5	1.7	<2.0
BOP-81(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<5.0	1.93	-4.5	<0.10	5.0	4.19	2.86	7.1	<2.0
BOP-81i(i)	5/4/2016	2009	1590	1358	1031	659	291	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<5.0	2.88	-47.0	<0.10	7.0	17.4	3.8	3.8	<2.0
BOP-81i(i)	8/11/2016	2107	1688	1456	1129	757	389	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<5.0	0.25	-83.7	<0.10	7.0	12.3	8.98	<1.0	<2.0
BOP-81i(i)	11/11/2016	2199	1780	1548	1221	849	481	<0.2	<0.2	<0.2	0.3	<5.0	<5.0	<5.0	0.51	17.4	<0.10	7.0	7.2	6.52	1.2	<2.0
BOP-82(i)	11/21/2011	382						4.6	91	1.6	<1.0	--	--	--	--	--	--	--	--	--	--	--
Downgradient Well	12/1/2011	392	-27					4.0	66	1.4	<1.0	<1.1	<1.2	<1.1	0.0	-152.8	3.3	1.1	--	--	9.4	--
BOP-82(i)	12/28/2011	419	0					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-82(i)	1/9/2012	431	12					2.6	47	1.0	<1.0	--	--	--	0.31	-238.8	<0.2	2.1	--	--	7.3	--
BOP-82(i)	2/16/2012	469	50					1.9	38	6.8	<1.0	<1.1	<1.2	<1.1	1.61	-196.5	1.7	0.1	--	--	10.3	--
BOP-82(i)	3/15/2012	497	78					2.0	36	11	<1.0	<1.1	<1.2	<1.1	0.82	-183.5	1.3	1.5	--	--	10.0	--
BOP-82(i)	4/17/2012	530	111					1.6	29	4.5	<1.0	<1.1	<1.2	<1.1	1.29	-219.3	1.8	0.6	--	--	10.6	--
BOP-82(i)	6/12/2012	586	167	-65				1.3	24	2.5	<1.0	<1.1	<1.2	<1.1	2.76	145.6	1.8	0.1	--	--	9.9	--
BOP-82(i)	8/16/2012	651	232	0				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-82(i)	9/18/2012	684	265	33				1.0	19	1.6	0.5	<5.0	<5.0	<5.0	2.75	-0.5	1.8	1.0	--	--	9.9	--
BOP-82(i)	11/14/2012	741	322	90				1.6	24	1.6	0.3	<5.0	<5.0	<5.0	3.03	72.7	1.8	0.0	--	--	10.3	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

Well	Date	Elapsed Time from Injections (a) (days) Pilot Injection	Elapsed Time from Injection (b) (days) PRB 1st Injection	Elapsed Time from Injection (c) (days) PRB 2nd Injection	Elapsed Time from Injection (d) (days) Source Zone Wells 1st Injection	Elapsed Time from Injection (e) (days) Source Zone Wells + PRB Injection	Donor Indicators: Methane (b) (mg/L)	Donor Indicators: TOC (mg/L)	Donor Indicators: pH	Molar Fraction: PCE	TCE	cDCE	VC	Ethene	Ethane
BOP-80(i)	5/9/2013	917	498	266	-61		20	1.3	6.31	0.00	0.01	0.00	0.03	0.00	0.96
BOP-80(i)	8/19/2013	1019	600	368	41		17	1.5	5.53	0.00	0.00	0.00	0.02	0.00	0.98
BOP-80(i)	11/11/2013	1103	684	452	125		22	1.4	5.99	0.00	0.00	0.00	0.01	0.00	0.99
BOP-80(i)	2/21/2014	1205	786	554	227		0.45	2.6	6.59	0.08	0.90	0.02	0.00	0.00	0.00
BOP-80(i)	5/7/2014	1280	861	629	302	-70	16	3.8	6.73	0.00	0.03	0.00	0.00	0.00	0.97
BOP-80(i)	8/14/2014	1379	960	728	401	29	13	909	5.28	0.00	0.01	0.03	0.14	0.00	0.82
BOP-80(i)	11/6/2014	1463	1044	812	485	113	2.9	1.4	6.82	0.00	0.09	0.71	0.19	0.00	0.00
BOP-80(i)	2/6/2015	1555	1136	904	577	205	15	2.7	6.17	0.00	0.00	0.00	0.03	0.00	0.97
BOP-80(i)	5/6/2015	1644	1225	993	666	294	21	2.4	6.29	0.00	0.00	0.00	0.02	0.00	0.98
BOP-80(i)	8/10/2015	1740	1321	1089	762	390	3.6	1.6	6.30	0.00	0.13	0.83	0.03	0.00	0.00
BOP-80(i)	11/4/2015	1826	1407	1175	848	476	20	2.3	6.35	0.00	0.00	0.02	0.10	0.00	0.88
BOP-80(i)	2/3/2016	1917	1498	1266	939	567	27	1.1	6.90	0.00	0.00	0.00	1.00	0.00	0.00
BOP-80i(i)	5/4/2016	2009	1590	1358	1031	659	15.0	<1.0	6.15	0.00	0.00	0.00	1.00	--	--
BOP-80i(i)	8/11/2016	2107	1688	1456	1129	757	21	2.5	6.13	0.00	0.00	0.01	0.04	0.00	0.96
BOP-80i(i)	11/11/2016	2199	1780	1548	1221	849	20	2.7	6.19	0.00	0.00	0.00	0.01	0.00	0.99
BOP-81(i)	11/21/2011	382					--	--	--	0.00	0.00	0.14	0.86	--	--
Downgradient Well	12/1/2011	392	-27				8.3	2.38	6.76	0.00	0.00	0.05	0.30	0.32	0.33
BOP-81(i)	12/28/2011	419	0				--	4.71	--	--	--	--	--	--	--
BOP-81(i)	1/9/2012	431	12				--	2.65	6.69	0.00	0.00	0.00	1.00	0.00	0.00
BOP-81(i)	2/16/2012	469	50				16.4	3.26	7.21	ND	ND	ND	ND	ND	ND
BOP-81(i)	3/15/2012	497	78				24.7	3.00	6.96	ND	ND	ND	ND	ND	ND
BOP-81(i)	4/17/2012	530	111				23.4	2.51	6.77	ND	ND	ND	ND	ND	ND
BOP-81(i)	6/12/2012	586	167	-65			20.9	2.34	6.10	0.00	0.00	0.00	0.00	0.00	1.00
BOP-81(i)	8/16/2012	651	232	0			--	3.2	--	--	--	--	--	--	--
BOP-81(i)	9/18/2012	684	265	33			18.0	3.0	6.49	0.00	0.00	0.00	0.03	0.00	0.97
BOP-81(i)	11/14/2012	741	322	90			15.0	<1.0	6.49	0.00	0.00	0.00	0.03	0.00	0.97
BOP-81(i)	2/6/2013	825	406	174			30.0	<1.0	6.55	ND	ND	ND	ND	ND	ND
BOP-81(i)	5/9/2013	917	498	266	-61		7.1	<1.0	6.49	0.00	0.22	0.00	0.78	0.00	0.00
BOP-81(i)	8/19/2013	1019	600	368	41		3.4	<1.0	6.74	0.00	0.00	0.00	1.00	0.00	0.00
BOP-81(i)	11/11/2013	1103	684	452	125		20.0	1.2	6.04	0.00	0.00	0.00	0.02	0.00	0.98
BOP-81(i)	2/21/2014	1205	786	554	227		0.33	1.4	6.14	0.44	0.56	0.00	0.00	0.00	0.00
BOP-81(i)	5/7/2014	1280	861	629	302	-70	24.0	2.0	6.73	0.00	0.01	0.00	0.00	0.00	0.99
BOP-81(i)	8/14/2014	1379	960	728	401	29	12.0	225	5.76	0.00	0.00	0.00	0.03	0.00	0.97
BOP-81(i)	11/6/2014	1463	1044	812	485	113	25.0	1.5	6.33	0.00	0.00	0.00	0.01	0.00	0.99
BOP-81(i)	2/6/2015	1555	1136	904	577	205	20.0	1.0	6.34	ND	ND	ND	ND	ND	ND
BOP-81(i)	5/6/2015	1644	1225	993	666	294	22.0	<1.0	6.33	ND	ND	ND	ND	ND	ND
BOP-81(i)	8/11/2015	1741	1322	1090	763	391	13.0	1.6	6.19	0.00	0.00	0.24	0.76	0.00	0.00
BOP-81(i)	11/4/2015	1826	1407	1175	848	476	20.0	1.6	6.34	0.00	0.00	0.02	0.06	0.00	0.93
BOP-81(i)	2/4/2016	1918	1499	1267	940	568	10	<1.0	6.90	ND	ND	ND	ND	ND	ND
BOP-81i(i)	5/4/2016	2009	1590	1358	1031	659	21.0	<1.0	6.15	ND	ND	ND	ND	--	--
BOP-81i(i)	8/11/2016	2107	1688	1456	1129	757	22	2.1	6.12	ND	ND	ND	ND	ND	ND
BOP-81i(i)	11/11/2016	2199	1780	1548	1221	849	23	1.3	6.22	0.00	0.00	0.00	1.00	--	--
BOP-82(i)	11/21/2011	382					--	--	--	0.04	0.94	0.02	0.00	--	--
Downgradient Well	12/1/2011	392	-27				<0.0007	<1.50	6.36	0.04	0.93	0.03	0.00	0.00	0.00
BOP-82(i)	12/28/2011	419	0				--	3.12	--	--	--	--	--	--	--
BOP-82(i)	1/9/2012	431	12				--	9.81	6.74	0.04	0.93	0.03	0.00	--	--
BOP-82(i)	2/16/2012	469	50				0.0144	4.85	6.94	0.03	0.78	0.19	0.00	0.00	0.00
BOP-82(i)	3/15/2012	497	78				<0.0007	3.25	6.97	0.03	0.69	0.28	0.00	0.00	0.00
BOP-82(i)	4/17/2012	530	111				<0.0007	2.46	6.78	0.03	0.80	0.17	0.00	0.00	0.00
BOP-82(i)	6/12/2012	586	167	-65			<0.0007	2.56	5.54	0.04	0.84	0.12	0.00	0.00	0.00
BOP-82(i)	8/16/2012	651	232	0			--	1.6	--	--	--	--	--	--	--
BOP-82(i)	9/18/2012	684	265	33			<0.015	1.4	6.45	0.03	0.83	0.09	0.05	0.00	0.00
BOP-82(i)	11/14/2012	741	322	90			0.036	<1.0	6.61	0.05	0.86	0.08	0.02	0.00	0.00

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)	Elapsed Time from Injection (f) (days)	Volatile Organic Compounds Analytical Results							Aquifer Redox Conditions							
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Source Zone Wells + PRB Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-82(i)	2/6/2013	825	406	174				1.5	15	1.8	0.4	<5.0	<5.0	<5.0	3.53	93.9	1.3	0.0	--	--	10.7	--
BOP-82(i)	5/6/2013	914	495	263	-64			1.1	17	0.9	0.3	<5.0	<5.0	<5.0	4.24	202.8	1.0	0.0	--	--	11.6	--
BOP-82(i)	8/19/2013	1019	600	368	41			1.4	19	0.5	<0.2	<5.0	<5.0	<5.0	--	14.2	1.1	0.0	--	--	11.5	--
BOP-82(i)	11/7/2013	1099	680	448	121			1.1	17	0.5	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-82(i)	2/21/2014	1205	786	554	227			1.0	14	0.4	<0.2	<5.0	<5.0	<5.0	3.15	189.6	0.88	0.5	--	--	9.2	--
BOP-82(i)	5/7/2014	1280	861	629	302	-70		0.7	12	0.5	<0.2	<5.0	<5.0	<5.0	1.29	82.9	0.30	0.0	--	--	8.4	--
BOP-82(i)	8/14/2014	1379	960	728	401	29		1.0	12	0.6	<0.2	<5.0	<5.0	<5.0	0.45	-135.4	<0.10	7.0	--	--	8.8	--
BOP-82(i)	11/7/2014	1464	1045	813	486	114		0.6	8.1	2.7	0.7	--	--	--	--	--	--	--	--	--	--	--
BOP-82(i)	2/6/2015	1555	1136	904	577	205		0.7	11	1.7	0.5	<5.0	<5.0	<5.0	0.68	-62.7	0.36	3.0	8.96	2.09	13.2	<2.0
BOP-82(i)	5/4/2015	1642	1223	991	664	292	-76	0.7	9.7	1.3	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-82(i)	8/11/2015	1741	1322	1090	763	391	23	0.6	8.6	1.4	0.6	<5.0	<5.0	<5.0	1.06	-186.1	<0.10	7.0	6.87	4.67	5.5	<2.0
BOP-82(i)	11/6/2015	1828	1409	1177	850	478	110	0.3	6.0	2.5	1.2	--	--	--	--	--	--	--	--	--	--	--
BOP-82(i)	2/4/2016	1918	1499	1267	940	568	200	0.5	8.5	1.4	0.4	<5.0	<5.0	<5.0	1.83	35.9	0.22	3.0	5.45	2.53	11.5	<2.0
BOP-82i(i)	5/3/2016	2007	1588	1356	1029	657	289	0.6	8.3	0.9	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-82i(i)	8/11/2016	2107	1688	1456	1129	757	389	0.6	8.7	0.6	<0.2	<5.0	<5.0	<5.0	0.75	15.0	0.40	1.5	13.6	1.13	13.4	--
BOP-82i(i)	11/16/2016	2205	1786	1554	1227	855	487	0.5	8.7	0.6	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-83(i)	11/21/2011	382						<1.0	31	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--
Downgradient Well	12/1/2011	392	-27					<1.0	16	<1.0	<1.0	<1.1	<1.2	<1.1	0.0	-149.7	8.0	1.0	--	--	20.0	--
BOP-83(i)	12/28/2011	419	0					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-83(i)	1/9/2012	431	12					1.8	36	<1.0	<1.0	--	--	--	6.18	-200.7	7.2	0.1	--	--	19.7	--
BOP-83(i)	2/16/2012	469	50					2.6	58	2.5	<1.0	<1.1	<1.2	<1.1	5.38	-181.3	6.6	0.1	--	--	24.5	--
BOP-83(i)	3/15/2012	497	78					1.1	19	<1.0	<1.0	<1.1	<1.2	<1.1	6.44	-164.7	7.5	0.1	--	--	16.7	--
BOP-83(i)	4/17/2012	530	111					<1.0	7.3	<1.0	<1.0	<1.1	<1.2	<1.1	3.56	-205.5	5.2	0.1	--	--	13.8	--
BOP-83(i)	6/12/2012	586	167	-65				<1.0	3.1	<1.0	<1.0	<1.1	<1.2	<1.1	8.16	147.4	6.8	0.1	--	--	14.2	--
BOP-83(i)	8/16/2012	651	232	0				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-83(i)	9/18/2012	684	265	33				0.5	9.7	0.3	<0.2	<5.0	<5.0	<5.0	5.14	65.7	6.6	0.0	--	--	13.6	--
BOP-83(i)	11/14/2012	741	322	90				<0.2	5.3	<0.2	<0.2	<5.0	<5.0	<5.0	6.95	110.3	6.3	0.0	--	--	12.2	--
BOP-83(i)	2/6/2013	825	406	174				1.2	21	0.9	<0.2	<5.0	<5.0	<5.0	7.73	152.7	5.9	0.0	--	--	11.5	--
BOP-83(i)	5/6/2013	914	495	263	-64			0.8	14	0.6	<0.2	<5.0	<5.0	<5.0	9.40	206.6	6.0	0.0	--	--	11.8	--
BOP-83(i)	8/22/2013	1022	603	371	44			<0.2	3.4	<0.2	<0.2	<5.0	<5.0	<5.0	7.13	171.6	5.7	0.0	--	--	11.5	--
BOP-83(i)	11/7/2013	1099	680	448	121			<0.2	2.4	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-83(i)	2/21/2014	1205	786	554	227			<0.2	2.3	<0.2	<0.2	<5.0	<5.0	<5.0	4.09	177.4	5.4	0.5	--	--	11.3	--
BOP-83(i)	5/7/2014	1280	861	629	302	-70		0.4	5.7	0.4	<0.2	<5.0	<5.0	<5.0	6.91	136.0	4.3	0.0	--	--	11.1	--
BOP-83(i)	8/14/2014	1379	960	728	401	29		<0.2	2.2	<0.2	<0.2	<5.0	<5.0	<5.0	7.68	-80.8	4.6	0.5	--	--	11.6	--
BOP-83(i)	11/11/2014	1468	1049	817	490	118		<0.2	2.1	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-83(i)	2/6/2015	1555	1136	904	577	205		0.4	12	1.0	<0.2	<5.0	<5.0	<5.0	7.69	52.6	3.6	0.0	11.9	<0.400	8.9	<2.0
BOP-83(i)	5/4/2015	1642	1223	991	664	292	-76	<0.2	2.0	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-83(i)	8/11/2015	1741	1322	1090	763	391	23	<0.2	2.0	<0.2	<0.2	<5.0	<5.0	<5.0	7.66	50.1	4.2	0.5	30.0	1.22	10	<2.0
BOP-83(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	1.9	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-83(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	1.7	<0.2	<0.2	<5.0	<5.0	<5.0	7.46	51.8	3.3	1.0	19.2	0.628	7.5	<2.0
BOP-83i(i)	5/6/2016	2010	1591	1359	1032	660	292	<0.2	2.4	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-83i(i)	8/11/2016	2107	1688	1456	1129	757	389	<0.2	2.6	<0.2	<0.2	<5.0	<5.0	<5.0	7.02	89.5	3.3	0.5	4.33	0.440	9.1	<2.0
BOP-83i(i)	11/16/2016	2205	1786	1554	1227	855	487	0.5	10	4.5	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	2/8/2012	461	42					<1.0	7.1	55	1.4	--	--	--	--	--	--	--	--	--	--	--
Injection Well	5/4/2012	547	128					<1.0	<1.0	1.8	150	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	6/12/2012	586	167					<1.0	<1.0	1.2	14	13.6	<1.2	<1.1	0.65	-37.3	<0.1	3.7	--	--	<0.1	--
BOP-84(i)	8/9/2012	644	225	-7				<1.0	<1.0	1.3	8.4	--	--	--	--	--	--	--	--	--	--	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

Well	Date	Elapsed Time from Injections (a) (days) Pilot Injection	Elapsed Time from Injection (b) (days) PRB 1st Injection	Elapsed Time from Injection (c) (days) PRB 2nd Injection	Elapsed Time from Injection (d) (days) Source Zone Wells 1st Injection	Elapsed Time from Injection (e) (days) Source Zone Wells + PRB Injection	Donor Indicators Methane (b) (mg/L)	TOC (mg/L)	pH	Molar Fraction PCE	TCE	cDCE	VC	Ethene	Ethane
BOP-82(i)	2/6/2013	825	406	174			0.036	<1.0	6.50	0.06	0.77	0.13	0.04	0.00	0.00
BOP-82(i)	5/6/2013	914	495	263	-64		0.48	<1.0	6.26	0.04	0.86	0.06	0.03	0.00	0.00
BOP-82(i)	8/19/2013	1019	600	368	41		0.11	<1.0	6.24	0.05	0.91	0.03	0.00	0.00	0.00
BOP-82(i)	11/7/2013	1099	680	448	121		--	--	--	0.05	0.92	0.04	0.00	--	--
BOP-82(i)	2/21/2014	1205	786	554	227		1.3	2.5	6.08	0.05	0.91	0.04	0.00	0.00	0.00
BOP-82(i)	5/7/2014	1280	861	629	302	-70	1.0	1.9	6.25	0.04	0.91	0.05	0.00	0.00	0.00
BOP-82(i)	8/14/2014	1379	960	728	401	29	1.5	36.4	5.82	0.06	0.88	0.06	0.00	0.00	0.00
BOP-82(i)	11/7/2014	1464	1045	813	486	114	--	--	--	0.03	0.59	0.27	0.11	--	--
BOP-82(i)	2/6/2015	1555	1136	904	577	205	3.0	1.8	6.25	0.04	0.74	0.15	0.07	0.00	0.00
BOP-82(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.05	0.81	0.15	0.00	--	--
BOP-82(i)	8/11/2015	1741	1322	1090	763	391	7.5	9.5	6.26	0.04	0.70	0.16	0.10	0.00	0.00
BOP-82(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.02	0.49	0.28	0.21	--	--
BOP-82(i)	2/4/2016	1918	1499	1267	940	568	2.3	<1.0	7.02	0.03	0.73	0.16	0.07	0.00	0.00
BOP-82i(i)	5/3/2016	2007	1588	1356	1029	657	--	--	--	0.05	0.83	0.12	0.00	--	--
BOP-82i(i)	8/11/2016	2107	1688	1456	1129	757	1.0	1.3	6.09	0.05	0.87	0.08	0.00	0.00	0.00
BOP-82i(i)	11/16/2016	2205	1786	1554	1227	855	--	--	--	0.04	0.88	0.08	0.00	0.00	0.00
BOP-83(i)	11/21/2011	382					--	--	--	0.00	1.00	0.00	0.00	--	--
Downgradient Well	12/1/2011	392	-27				<0.0007	<1.50	6.73	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	12/28/2011	419	0				--	2.87	--	--	--	--	--	--	--
BOP-83(i)	1/9/2012	431	12				--	<1.5	6.70	0.04	0.96	0.00	0.00	--	--
BOP-83(i)	2/16/2012	469	50				<0.0007	2.73	7.10	0.03	0.91	0.05	0.00	0.00	0.00
BOP-83(i)	3/15/2012	497	78				<0.0007	1.90	6.87	0.04	0.96	0.00	0.00	0.00	0.00
BOP-83(i)	4/17/2012	530	111				<0.0007	<1.50	6.34	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	6/12/2012	586	167	-65			<0.015	<1.50	5.98	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	8/16/2012	651	232	0			--	<1.0	--	--	--	--	--	--	--
BOP-83(i)	9/18/2012	684	265	33			<0.015	1.2	6.07	0.04	0.92	0.04	0.00	0.00	0.00
BOP-83(i)	11/14/2012	741	322	90			0.0064	<1.0	6.69	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	2/6/2013	825	406	174			<0.005	<1.0	6.63	0.04	0.91	0.05	0.00	0.00	0.00
BOP-83(i)	5/6/2013	914	495	263	-64		<0.005	<1.0	6.32	0.04	0.91	0.05	0.00	0.00	0.00
BOP-83(i)	8/22/2013	1022	603	371	44		<0.005	<1.0	6.35	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	11/7/2013	1099	680	448	121		--	--	--	0.00	1.00	0.00	0.00	--	--
BOP-83(i)	2/21/2014	1205	786	554	227		<0.005	<1.0	6.33	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	5/7/2014	1280	861	629	302	-70	0.19	1.2	6.43	0.05	0.87	0.08	0.00	0.00	0.00
BOP-83(i)	8/14/2014	1379	960	728	401	29	0.041	1.5	6.05	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	11/11/2014	1468	1049	817	490	118	--	--	--	0.00	1.00	0.00	0.00	--	--
BOP-83(i)	2/6/2015	1555	1136	904	577	205	0.38	<1.0	6.35	0.02	0.88	0.10	0.00	0.00	0.00
BOP-83(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	1.00	0.00	0.00	--	--
BOP-83(i)	8/11/2015	1741	1322	1090	763	391	0.1	<1.0	6.47	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	1.00	0.00	0.00	--	--
BOP-83(i)	2/4/2016	1918	1499	1267	940	568	0.36	<1.0	7.33	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83i(i)	5/6/2016	2010	1591	1359	1032	660	--	--	--	0.00	1.00	0.00	0.00	--	--
BOP-83i(i)	8/11/2016	2107	1688	1456	1129	757	0.0069	<1.0	6.01	0.00	1.00	0.00	0.00	0.00	0.00
BOP-83i(i)	11/16/2016	2205	1786	1554	1227	855	--	--	--	0.02	0.61	0.37	0.00	0.00	0.00
BOP-84(i)	2/8/2012	461	42				--	--	--	0.00	0.08	0.88	0.03	--	--
Injection Well	5/4/2012	547	128				--	--	--	0.00	0.00	0.01	0.99	--	--
BOP-84(i)	6/12/2012	586	167				9.82	16.7	6.33	0.00	0.00	0.02	0.31	0.67	0.00
BOP-84(i)	8/9/2012	644	225	-7			--	--	--	0.00	0.00	0.09	0.91	--	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

		Elapsed Time from Injections (a) (days)	Elapsed Time from Injection (b) (days)	Elapsed Time from Injection (c) (days)	Elapsed Time from Injection (d) (days)	Elapsed Time from Injection (e) (days)	Elapsed Time from Injection (f) (days)	Volatile Organic Compounds Analytical Results							Aquifer Redox Conditions							
Well	Date	Pilot Injection	PRB 1st Injection	PRB 2nd Injection	Source Zone Wells 1st Injection	Source Zone Wells + PRB Injection	Source Zone Wells + PRB Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-84(i)	8/16/2012	651	232	0				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	9/19/2012	685	266	34				<0.4	4.1	69	2.9	<5.0	<5.0	<5.0	0.28	17.7	<0.10	3.5	--	--	<1.0	--
BOP-84(i)	11/8/2012	735	316	84				<0.2	0.5	11	35	<5.0	5.7	<5.0	--	--	<0.10	--	--	--	<1.0	--
BOP-84(i)	11/9/2012	736	317	85				--	--	--	--	--	--	--	0.81	131.2	--	3.0	--	--	--	--
BOP-84(i)	2/5/2013	824	405	173				<0.2	0.5	0.7	2.3	<5.0	<5.0	<5.0	0.97	-43.9	<0.10	2.0	--	--	<1.0	--
BOP-84(i)	5/6/2013	914	495	263	-64			<0.2	0.4	0.5	1.6	<5.0	<5.0	<5.0	1.92	-75.2	<0.10	2.0	--	--	<1.0	--
BOP-84(i)	8/7/2013	1007	588	356	29			<0.2	2.2	18	15	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	11/8/2013	1100	681	449	122			<0.2	0.7	3.3	1.3	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	2/5/2014	1189	770	538	211			<0.2	0.2	2.5	0.6	<5.0	<5.0	<5.0	2.03	-118.65	<0.10	5.5	--	--	<1.0	--
BOP-84(i)	5/8/2014	1281	862	630	303	-69		<0.2	<0.2	2.0	1.9	7.4	<5.0	<5.0	1.16	-32.6	<0.10	--	--	--	<1.0	--
BOP-84(i)	11/7/2014	1464	1045	813	486	114		<0.2	<0.2	8.0	2.9	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	2/3/2015	1552	1133	901	574	202		<0.2	0.5	15	3.4	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	5/4/2015	1642	1223	991	664	292	-76	<0.2	0.3	8.9	3.1	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	<0.2	2.8	2.1	--	--	--	--	--	--	--	--	--	--	--
BOP-84(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	<0.2	3.4	2.0	--	--	--	--	--	--	--	--	--	--	--
BOP-84i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	<0.2	3.8	2.2	--	--	--	--	--	--	--	--	--	--	--
BOP-84i(i)	8/8/2016	2104	1685	1453	1126	754	386	<0.2	<0.2	4.6	1.7	--	--	--	--	--	--	--	--	--	--	--
BOP-84i(i)	11/4/2016	2193	1774	1542	1215	843	475	<0.2	<0.2	4.6	1.5	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	2/8/2012	461	42					1.6	33	6.5	<1.0	--	--	--	--	--	--	--	--	--	--	--
Injection Well	5/4/2012	547	128					<1.0	29	6.5	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	8/9/2012	644	225	-7				1.2	32	5.7	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	11/8/2012	735	316	84				0.9	20	4.3	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	2/6/2013	825	406	174				0.8	37	7.0	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	5/2/2013	910	491	259	-68			1.1	30	5.8	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	8/7/2013	1007	588	356	29			0.5	1.5	22	0.8	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	11/8/2013	1100	681	449	122			<0.2	0.2	2.4	2.1	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	2/5/2014	1189	770	538	211			<0.2	<0.2	<0.2	1.3	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	5/7/2014	1280	861	629	302	-70		<0.2	<0.2	<0.2	1.5	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	11/5/2014	1462	1043	811	484	112		<0.2	1.6	3.4	0.4	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	2/3/2015	1552	1133	901	574	202		<0.2	1.4	5.2	0.3	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	5/4/2015	1642	1223	991	664	292	-76	<0.2	0.8	5.1	0.4	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	<0.2	0.4	0.3	--	--	--	--	--	--	--	--	--	--	--
BOP-85(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	<0.2	0.7	0.5	--	--	--	--	--	--	--	--	--	--	--
BOP-85i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	<0.2	1.0	0.9	--	--	--	--	--	--	--	--	--	--	--
BOP-85i(i)	8/8/2016	2104	1685	1453	1126	754	386	<0.2	0.3	1.3	0.9	--	--	--	--	--	--	--	--	--	--	--
BOP-85i(i)	11/4/2016	2192	1773	1541	1214	842	474	<0.2	0.3	1.3	0.9	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	2/8/2012	461	42					1.2	21	17	<1.0	--	--	--	--	--	--	--	--	--	--	--
Injection Well	5/4/2012	547	128					<1.0	28	5.2	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	8/9/2012	644	225	-7				1.0	39	7.7	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	11/8/2012	735	316	84				0.9	20	4.6	0.5	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	2/6/2013	825	406	174				0.6	31	6.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	5/2/2013	910	491	259	-68			0.7	35	7.4	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	8/7/2013	1007	588	356	29			0.6	9.1	15	1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	11/8/2013	1100	681	449	122			<0.2	1.4	2.0	2.6	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	2/5/2014	1189	770	538	211			0.3	0.4	0.4	0.6	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	5/7/2014	1280	861	629	302	-70		<0.2	0.4	1.3	0.8	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	11/5/2014	1462	1043	811	484	112		<0.2	0.6	4.6	3.0	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	2/3/2015	1552	1133	901	574	202		<0.2	0.9	5.5	3.5	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	5/4/2015	1642	1223	991	664	292	-76	<0.2	3.5	5.0	2.8	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	0.3	1.6	2.8	--	--	--	--	--	--	--	--	--	--	--
BOP-86(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	0.3	1.9	2.2	--	--	--	--	--	--	--	--	--	--	--
BOP-86i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	0.4	2.0	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-86i(i)	8/8/2016	2104	1685	1453	1126	754	386	<0.2	0.6	2.5	1.7	--	--	--	--	--	--	--	--	--	--	--
BOP-86i(i)	11/4/2016	2192	1773	1541	1214	842	474	<0.2	0.6	2.3	1.6	--	--	--	--	--	--	--	--	--	--	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

Well	Date	Elapsed Time from Injections (a) (days) Pilot Injection	Elapsed Time from Injection (b) (days) PRB 1st Injection	Elapsed Time from Injection (c) (days) PRB 2nd Injection	Elapsed Time from Injection (d) (days) Source Zone Wells 1st Injection	Elapsed Time from Injection (e) (days) Source Zone Wells + PRB Injection	Donor Indicators Methane (b) (mg/L)	TOC (mg/L)	pH	Molar Fraction PCE	TCE	cDCE	VC	Ethene	Ethane
BOP-84(i)	8/16/2012	651	232	0			--	--	--	--	--	--	--	--	--
BOP-84(i)	9/19/2012	685	266	34			14	2620	4.57	0.00	0.04	0.90	0.06	0.00	0.00
BOP-84(i)	11/8/2012	735	316	84			22	276	--	0.00	0.00	0.13	0.65	0.00	0.22
BOP-84(i)	11/9/2012	736	317	85			--	--	6.36	--	--	--	--	--	--
BOP-84(i)	2/5/2013	824	405	173			26	80.5	6.29	0.00	0.08	0.15	0.77	0.00	0.00
BOP-84(i)	5/6/2013	914	495	263	-64		21	102	6.12	0.00	0.09	0.15	0.76	0.00	0.00
BOP-84(i)	8/7/2013	1007	588	356	29		--	--	--	0.00	0.04	0.42	0.54	--	--
BOP-84(i)	11/8/2013	1100	681	449	122		--	--	--	0.00	0.09	0.57	0.35	--	--
BOP-84(i)	2/5/2014	1189	770	538	211		19	378	6.54	0.00	0.04	0.70	0.26	0.00	0.00
BOP-84(i)	5/8/2014	1281	862	630	303	-69	14	40.1	6.61	0.00	0.00	0.07	0.10	0.84	0.00
BOP-84(i)	11/7/2014	1464	1045	813	486	114	--	--	--	0.00	0.00	0.64	0.36	--	--
BOP-84(i)	2/3/2015	1552	1133	901	574	202	--	--	--	0.00	0.02	0.73	0.26	--	--
BOP-84(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	0.02	0.64	0.35	--	--
BOP-84(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	0.00	0.46	0.54	--	--
BOP-84(i)	2/4/2016	1918	1499	1267	940	568	--	--	--	0.00	0.00	0.52	0.48	--	--
BOP-84i(i)	5/5/2016	2009	1590	1358	1031	659	--	--	--	0.00	0.00	0.53	0.47	--	--
BOP-84i(i)	8/8/2016	2104	1685	1453	1126	754	--	--	--	0.00	0.00	0.64	0.36	--	--
BOP-84i(i)	11/4/2016	2193	1774	1542	1215	843	--	--	--	0.00	0.00	0.66	0.34	--	--
BOP-85(i)	2/8/2012	461	42				--	--	--	0.03	0.77	0.20	0.00	--	--
Injection Well	5/4/2012	547	128				--	--	--	0.00	0.77	0.23	0.00	--	--
BOP-85(i)	8/9/2012	644	225	-7			--	--	--	0.02	0.79	0.19	0.00	--	--
BOP-85(i)	11/8/2012	735	316	84			--	--	--	0.03	0.75	0.22	0.00	--	--
BOP-85(i)	2/6/2013	825	406	174			--	--	--	0.01	0.79	0.20	0.00	--	--
BOP-85(i)	5/2/2013	910	491	259	-68		--	--	--	0.02	0.77	0.20	0.00	--	--
BOP-85(i)	8/7/2013	1007	588	356	29		--	--	--	0.01	0.04	0.89	0.05	--	--
BOP-85(i)	11/8/2013	1100	681	449	122		--	--	--	0.00	0.03	0.41	0.56	--	--
BOP-85(i)	2/5/2014	1189	770	538	211		--	--	--	0.00	0.00	0.00	1.00	--	--
BOP-85(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.00	0.00	1.00	--	--
BOP-85(i)	11/5/2014	1462	1043	811	484	112	--	--	--	0.00	0.23	0.65	0.12	--	--
BOP-85(i)	2/3/2015	1552	1133	901	574	202	--	--	--	0.00	0.15	0.78	0.07	--	--
BOP-85(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	0.09	0.81	0.10	--	--
BOP-85(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	0.00	0.46	0.54	--	--
BOP-85(i)	2/4/2016	1918	1499	1267	940	568	--	--	--	0.00	0.00	0.47	0.53	--	--
BOP-85i(i)	5/5/2016	2009	1590	1358	1031	659	--	--	--	0.00	0.00	0.42	0.58	--	--
BOP-85i(i)	8/8/2016	2104	1685	1453	1126	754	--	--	--	0.00	0.08	0.45	0.48	--	--
BOP-85i(i)	11/4/2016	2192	1773	1541	1214	842	--	--	--	0.00	0.08	0.45	0.48	--	--
BOP-86(i)	2/8/2012	461	42				--	--	--	0.02	0.47	0.51	0.00	--	--
Injection Well	5/4/2012	547	128				--	--	--	0.00	0.80	0.20	0.00	--	--
BOP-86(i)	8/9/2012	644	225	-7			--	--	--	0.02	0.78	0.21	0.00	--	--
BOP-86(i)	11/8/2012	735	316	84			--	--	--	0.03	0.71	0.22	0.04	--	--
BOP-86(i)	2/6/2013	825	406	174			--	--	--	0.01	0.78	0.21	0.00	--	--
BOP-86(i)	5/2/2013	910	491	259	-68		--	--	--	0.01	0.77	0.22	0.00	--	--
BOP-86(i)	8/7/2013	1007	588	356	29		--	--	--	0.01	0.28	0.64	0.07	--	--
BOP-86(i)	11/8/2013	1100	681	449	122		--	--	--	0.00	0.15	0.28	0.57	--	--
BOP-86(i)	2/5/2014	1189	770	538	211		--	--	--	0.10	0.16	0.22	0.52	--	--
BOP-86(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.10	0.46	0.44	--	--
BOP-86(i)	11/5/2014	1462	1043	811	484	112	--	--	--	0.00	0.05	0.47	0.48	--	--
BOP-86(i)	2/3/2015	1552	1133	901	574	202	--	--	--	0.00	0.06	0.47	0.47	--	--
BOP-86(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	0.22	0.42	0.36	--	--
BOP-86(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	0.04	0.26	0.70	--	--
BOP-86(i)	2/4/2016	1918	1499	1267	940	568	--	--	--	0.00	0.04	0.34	0.62	--	--
BOP-86i(i)	5/5/2016	2009	1590	1358	1031	659	--	--	--	0.00	0.13	0.87	0.00	--	--
BOP-86i(i)	8/8/2016	2104	1685	1453	1126	754	--	--	--	0.00	0.08	0.45	0.47	--	--
BOP-86i(i)	11/4/2016	2192	1773	1541	1214	842	--	--	--	0.00	0.08	0.44	0.48	--	--

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

Well	Date	Elapsed Time from Injections (a) (days) Pilot Injection	Elapsed Time from Injection (b) (days) PRB 1st Injection	Elapsed Time from Injection (c) (days) PRB 2nd Injection	Elapsed Time from Injection (d) (days) Source Zone Wells 1st Injection	Elapsed Time from Injection (e) (days) Source Zone Wells + PRB Injection	Elapsed Time from Injection (f) (days) Source Zone Wells + PRB Injection	Volatile Organic Compounds Analytical Results PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Iron II (mg/L)	Iron, Tot (mg/L)	Iron, Diss (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)
BOP-87(i)	2/8/2012	461	42					1.3	14	1.8	<1.0	--	--	--	--	--	--	--	--	--	--	--
Injection Well	5/4/2012	547	128					<1.0	24	1.4	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	8/9/2012	644	225	-7				2.2	52	2.6	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	11/8/2012	735	316	84				1.2	9.7	1.6	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	2/6/2013	825	406	174				0.4	8.5	1.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	5/2/2013	910	491	259	-68			0.2	7.1	1.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	8/7/2013	1007	588	356	29			0.7	21	6.3	0.3	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	11/8/2013	1100	681	449	122			<0.2	0.6	6.2	0.6	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	2/5/2014	1189	770	538	211			<0.2	0.3	1.2	1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	5/7/2014	1280	861	629	302	-70		<0.2	<0.2	0.3	0.5	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	11/5/2014	1462	1043	811	484	112		<0.2	0.6	1.5	0.8	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	2/3/2015	1552	1133	901	574	202		<0.2	2.1	2.2	0.9	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	5/4/2015	1642	1223	991	664	292	-76	<0.2	1.4	2.8	0.7	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	11/6/2015	1828	1409	1177	850	478	110	<0.2	<0.2	0.3	0.5	--	--	--	--	--	--	--	--	--	--	--
BOP-87(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	<0.2	0.5	0.6	--	--	--	--	--	--	--	--	--	--	--
BOP-87i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	0.2	0.6	1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-87i(i)	8/8/2016	2104	1685	1453	1126	754	386	<0.2	0.3	0.9	0.8	--	--	--	--	--	--	--	--	--	--	--
BOP-87i(i)	11/4/2016	2192	1773	1541	1214	842	474	<0.2	0.3	1.0	0.8	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	2/8/2012	461	42					2.0	26	2.2	<1.0	--	--	--	--	--	--	--	--	--	--	--
Injection Well	5/4/2012	547	128					<1.0	19	2.5	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	8/9/2012	644	225	-7				2.8	130	8.9	<1.0	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	11/8/2012	735	316	84				1.2	11	1.5	<0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	2/6/2013	825	406	174				0.9	11	1.4	0.2	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	5/2/2013	910	491	259	-68			0.6	14	2.2	1.2	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	8/7/2013	1007	588	356	29			0.8	7.8	11	0.2	<5.0	<5.0	<5.0	1.19	-133.4	<0.10	2.0	--	--	<1.0	--
BOP-88(i)	11/11/2013	1103	684	452	125			<0.2	0.2	85	4.1	<5.0	<5.0	<5.0	1.21	-90.1	<0.10	4.0	--	--	<1.0	--
BOP-88(i)	2/5/2014	1189	770	538	211			<0.2	0.9	3.0	27	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	5/7/2014	1280	861	629	302	-70		<0.2	1.0	3.5	7.7	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	11/11/2014	1468	1049	817	490	118		<0.2	1.9	30	4.2	<5.0	<5.0	<5.0	1.36	-208.2	<1.0	4.0	639	624	276	9.7
BOP-88(i)	2/9/2015	1558	1139	907	580	208		0.3	12	90	4.0	<5.0	<5.0	<5.0	0.46	-94.9	<1.0	7.0	829	775	243	16.5
BOP-88(i)	5/6/2015	1644	1225	993	666	294	-74	1.0	28	150	8.5	7.4	<5.0	<5.0	0.82	-97.0	<1.0	7.0	611	603	138	15.6
BOP-88(i)	11/4/2015	1826	1407	1175	848	476	108	<0.2	0.8	8.7	2.4	--	--	--	--	--	--	--	--	--	--	--
BOP-88(i)	2/4/2016	1918	1499	1267	940	568	200	<0.2	1.6	24	4.1	7.2	<5.0	<5.0	1.68	58.4	<1.0	7.0	2520	2470	2270	<20.0
BOP-88i(i)	5/5/2016	2009	1590	1358	1031	659	291	<0.2	3.3	65	6.8	7.9	<5.0	<5.0	1.12	9.7	<1.0	7.0	2530	2510	2370	6.2
BOP-88i(i)	8/9/2016	2105	1686	1454	1127	755	387	<0.2	8.9	100	7.0	9.3	<5.0	<5.0	0.39	-43.7	4.8	7.0	2570	2660	2330	78.4
BOP-88i(i)	11/8/2016	2196	1777	1545	1218	846	478	<0.4	6.2	110	7.4	11	<5.0	<5.0	0.92	115.1	1.1	7.0	2580	2490	2620	<2.0

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

Well	Date	Elapsed Time from Injections (a) (days) Pilot Injection	Elapsed Time from Injection (b) (days) PRB 1st Injection	Elapsed Time from Injection (c) (days) PRB 2nd Injection	Elapsed Time from Injection (d) (days) Source Zone Wells 1st Injection	Elapsed Time from Injection (e) (days) Source Zone Wells + PRB Injection	Donor Indicators Methane (b) (mg/L)	Donor Indicators TOC (mg/L)	Donor Indicators pH	Molar Fraction PCE	Molar Fraction TCE	Molar Fraction cDCE	Molar Fraction VC	Molar Fraction Ethene	Molar Fraction Ethane
BOP-87(i)	2/8/2012	461	42				--	--	--	0.06	0.80	0.14	0.00	--	--
Injection Well	5/4/2012	547	128				--	--	--	0.00	0.93	0.07	0.00	--	--
BOP-87(i)	8/9/2012	644	225	-7			--	--	--	0.03	0.91	0.06	0.00	--	--
BOP-87(i)	11/8/2012	735	316	84			--	--	--	0.07	0.76	0.17	0.00	--	--
BOP-87(i)	2/6/2013	825	406	174			--	--	--	0.03	0.81	0.16	0.00	--	--
BOP-87(i)	5/2/2013	910	491	259	-68		--	--	--	0.02	0.80	0.18	0.00	--	--
BOP-87(i)	8/7/2013	1007	588	356	29		--	--	--	0.02	0.68	0.28	0.02	--	--
BOP-87(i)	11/8/2013	1100	681	449	122		--	--	--	0.00	0.06	0.82	0.12	--	--
BOP-87(i)	2/5/2014	1189	770	538	211		--	--	--	0.00	0.07	0.40	0.52	--	--
BOP-87(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.00	0.28	0.72	--	--
BOP-87(i)	11/5/2014	1462	1043	811	484	112	--	--	--	0.00	0.14	0.47	0.39	--	--
BOP-87(i)	2/3/2015	1552	1133	901	574	202	--	--	--	0.00	0.30	0.43	0.27	--	--
BOP-87(i)	5/4/2015	1642	1223	991	664	292	--	--	--	0.00	0.21	0.57	0.22	--	--
BOP-87(i)	11/6/2015	1828	1409	1177	850	478	--	--	--	0.00	0.00	0.28	0.72	--	--
BOP-87(i)	2/4/2016	1918	1499	1267	940	568	--	--	--	0.00	0.00	0.35	0.65	--	--
BOP-87i(i)	5/5/2016	2009	1590	1358	1031	659	--	--	--	0.00	0.06	0.26	0.67	--	--
BOP-87i(i)	8/8/2016	2104	1685	1453	1126	754	--	--	--	0.00	0.09	0.38	0.53	--	--
BOP-87i(i)	11/4/2016	2192	1773	1541	1214	842	--	--	--	0.00	0.09	0.41	0.50	--	--
BOP-88(i)	2/8/2012	461	42				--	--	--	0.05	0.85	0.10	0.00	--	--
Injection Well	5/4/2012	547	128				--	--	--	0.00	0.85	0.15	0.00	--	--
BOP-88(i)	8/9/2012	644	225	-7			--	--	--	0.02	0.90	0.08	0.00	--	--
BOP-88(i)	11/8/2012	735	316	84			--	--	--	0.07	0.79	0.15	0.00	--	--
BOP-88(i)	2/6/2013	825	406	174			--	--	--	0.05	0.78	0.14	0.03	--	--
BOP-88(i)	5/2/2013	910	491	259	-68		--	--	--	0.02	0.70	0.15	0.13	--	--
BOP-88(i)	8/7/2013	1007	588	356	29		1.9	294	5.88	0.03	0.33	0.63	0.02	0.00	0.00
BOP-88(i)	11/11/2013	1103	684	452	125		17	458	6.20	0.00	0.00	0.93	0.07	0.00	0.00
BOP-88(i)	2/5/2014	1189	770	538	211		--	--	--	0.00	0.01	0.07	0.92	--	--
BOP-88(i)	5/7/2014	1280	861	629	302	-70	--	--	--	0.00	0.05	0.22	0.74	--	--
BOP-88(i)	11/11/2014	1468	1049	817	490	118	13	3150	4.56	0.00	0.04	0.79	0.17	0.00	0.00
BOP-88(i)	2/9/2015	1558	1139	907	580	208	12	3990	4.90	0.00	0.08	0.86	0.06	0.00	0.00
BOP-88(i)	5/6/2015	1644	1225	993	666	294	16	3370	4.82	0.00	0.10	0.71	0.06	0.12	0.00
BOP-88(i)	11/4/2015	1826	1407	1175	848	476	--	--	--	0.00	0.05	0.67	0.29	--	--
BOP-88(i)	2/4/2016	1918	1499	1267	940	568	11	8570	5.64	0.00	0.02	0.43	0.11	0.44	0.00
BOP-88i(i)	5/5/2016	2009	1590	1358	1031	659	15.0	8780	4.67	0.00	0.02	0.62	0.10	0.26	0.00
BOP-88i(i)	8/9/2016	2105	1686	1454	1127	755	14	10000	4.67	0.00	0.04	0.67	0.07	0.21	0.00
BOP-88i(i)	11/8/2016	2196	1777	1545	1218	846	12	9830	4.44	0.00	0.03	0.67	0.07	0.23	0.00

TABLE 6-1
BIOREMEDIATION SUMMARY
FORMER DEGREASER SOURCE CONTROL AREA
BOEING PORTLAND

Acronyms/Abbreviations:

cis = 1,2-dichloroethene
Diss = dissolved
DO = dissolved oxygen
gpm = gallons per minute
µg/L = micrograms per liter
mg/L = milligrams per liter
ORP = oxygen reduction potential
PCE = tetrachloroethene
PRB = permeable reactive barrier
TOC = total organic carbon
TCE = trichloroethene
VC = vinyl chloride

Injection Notes

a) November 4-9, 2010: Conduct pilot injection test at BOP-72(i) with 900 gal of water mixed with 3/4 drum of Wilclear sodium lactate.
b) December 28, 2011: PRB injection at BOP-74(i). Injected 15 drums of LactOil, Newman Zone vegetable oil emulsion, and Wilclear soldium lacate with 15,000 gallons of water. Injection rates were between 70 to 80 gpm.
c) August 18, 2012: Conducted PRB injection at BOP-74(i) with 30,000 gallons of lactoil and water mixture.
d) July 2-9, 2013: Conducted gravity injection at seven source area zone injection wells (BOP-78, 79, 84, 85, 86, 87, 88). Injection of 10,000 gallons total lactoil donor and water. Average injection rates ranged from 4.8 to 11.7 gpm.
e) July 12-16, 2014: Conducted source area zone injection by gravity flow to seven multi-purpose injection wells and pump flow to PRB well BOP-74(i). Injection consisted of 50,000-gallon mixture of water, Textrol BR, glycerin, and ferrous sultate.
f) June 8-19, 2015: Conducted source area zone injection by gravity flow to seven multi-purpose injection wells and pump flow to PRB well BOP-74(i). Injection consisted of 50,000-gallon mixture of water, Textrol BR, glycerin, and ferrous sultate.

Notes:

-- Data not collected or analyzed
Blue highlighted values indicate the compound with the highest micromoles per event, ethene and ethane combined are considered for maximum molar fraction. Compounds with 2 percent of maximum compound are also highlighted due to potential laboratory variability.

APPENDIX A

BOP-7(d) Well Log

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS [2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
	≤ 5% - "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

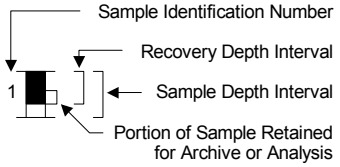
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time other than ATD

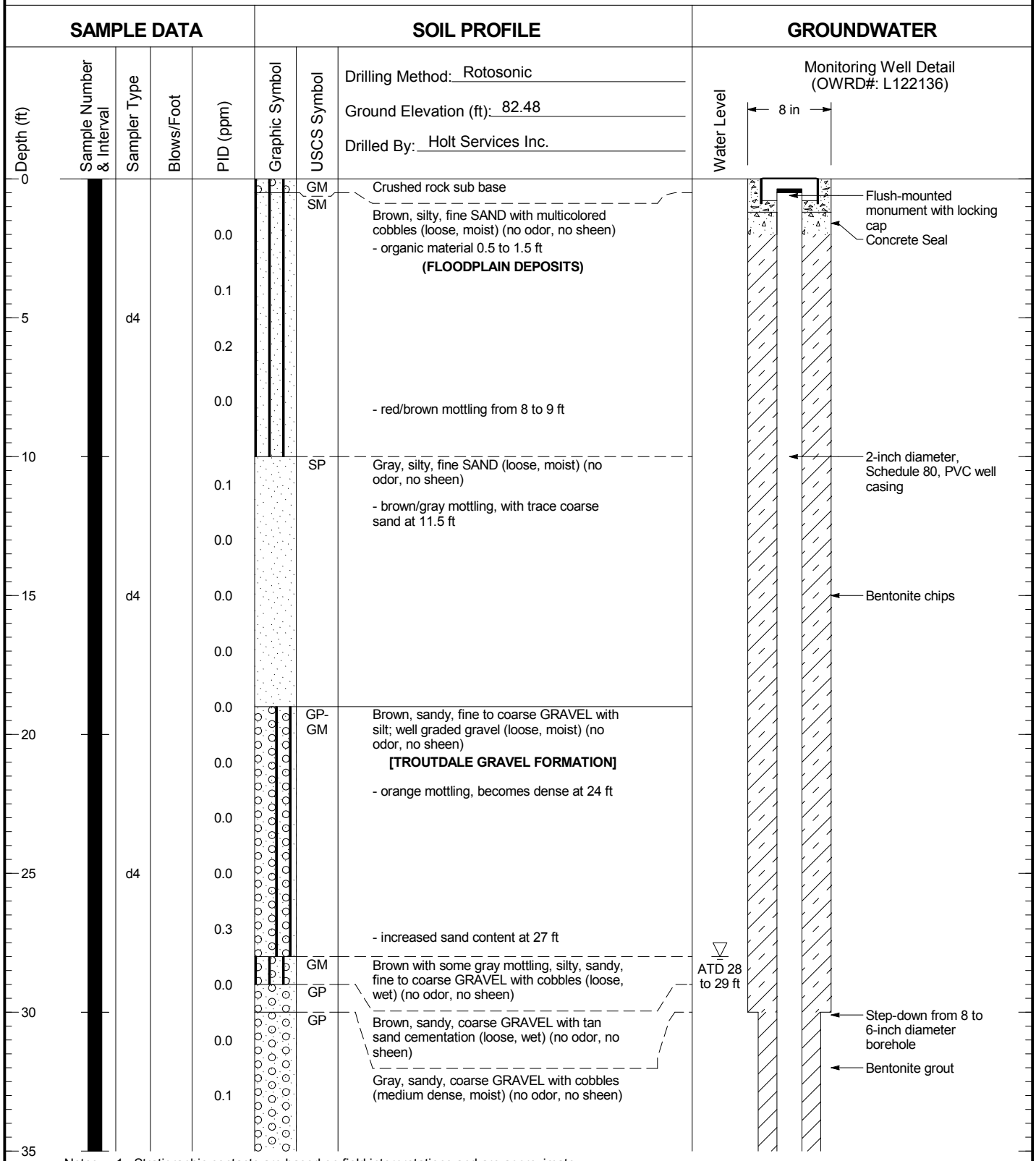
LANDAU ASSOCIATES

Boeing of Portland
Gresham, Oregon

Soil Classification System and Key

Figure A-1

BOP-7d



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

25116117.110 4/10/17 \\PORTLAND1\DATA\MODELING\GINT\PROJECTS\BOEING\025116.117.110.GPJ WELL LOG

LANDAU ASSOCIATES

Boeing of Portland
Gresham, Oregon

Log of Monitoring Well BOP-7d

Figure
A-2
(1 of 5)

BOP-7d

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Water Level

Drilling Method: Rotosonic
Ground Elevation (ft): 82.48
Drilled By: Holt Services Inc.

Monitoring Well Detail
(OWRD#: L122136)

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	USCS Symbol	Soil Description
35		d4	0.1	GP	Gray, sandy, coarse GRAVEL with cobbles (medium dense, moist) (no odor, no sheen)
			0.8		
			0.1		- decreased sand content at 38 ft
40					- silt lense from 40 to 40.5 ft
			0.0	GP	Brown with orange mottling, sandy, fine to coarse GRAVEL (medium dense, moist) (no odor, no sheen)
			0.0		- increased silt content from 42.5 to 43 ft
			0.0		- turns brown/gray at 43 ft
45		d4	0.1		
			0.0		- boulder 46 to 47 ft
50			0.0		
			0.3		
		d4			
			0.0		
55			0.1	GP	Gray-brown, sandy, coarse GRAVEL (dense, wet) (no odor, no sheen)
		d4	0.0		- boulder 58 to 58.5 ft
				SP	Brown, gravelly, fine to coarse SAND (medium dense, wet) (no odor, no sheen)
60			0.0	GP	Gray, sandy, fine to coarse GRAVEL (medium dense, wet) (no odor, no sheen)
			0.0		
				SP	Brown, gravelly, fine to coarse SAND with silt (medium dense, wet) (no odor, no sheen)
			0.0	GP	Gray, sandy, coarse GRAVEL (mediun dense, wet) (no odor, no sheen)
65		d4			
			0.0		
			0.0		
70					

11/1/2016

2-inch diameter, Schedule 80, PVC well casing

Bentonite grout

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

25116117.110 4/10/17 \\PORTLAND1\DATA\MODELING\GINT\PROJECTS\BOEING\025116.117.110.GPJ WELL LOG

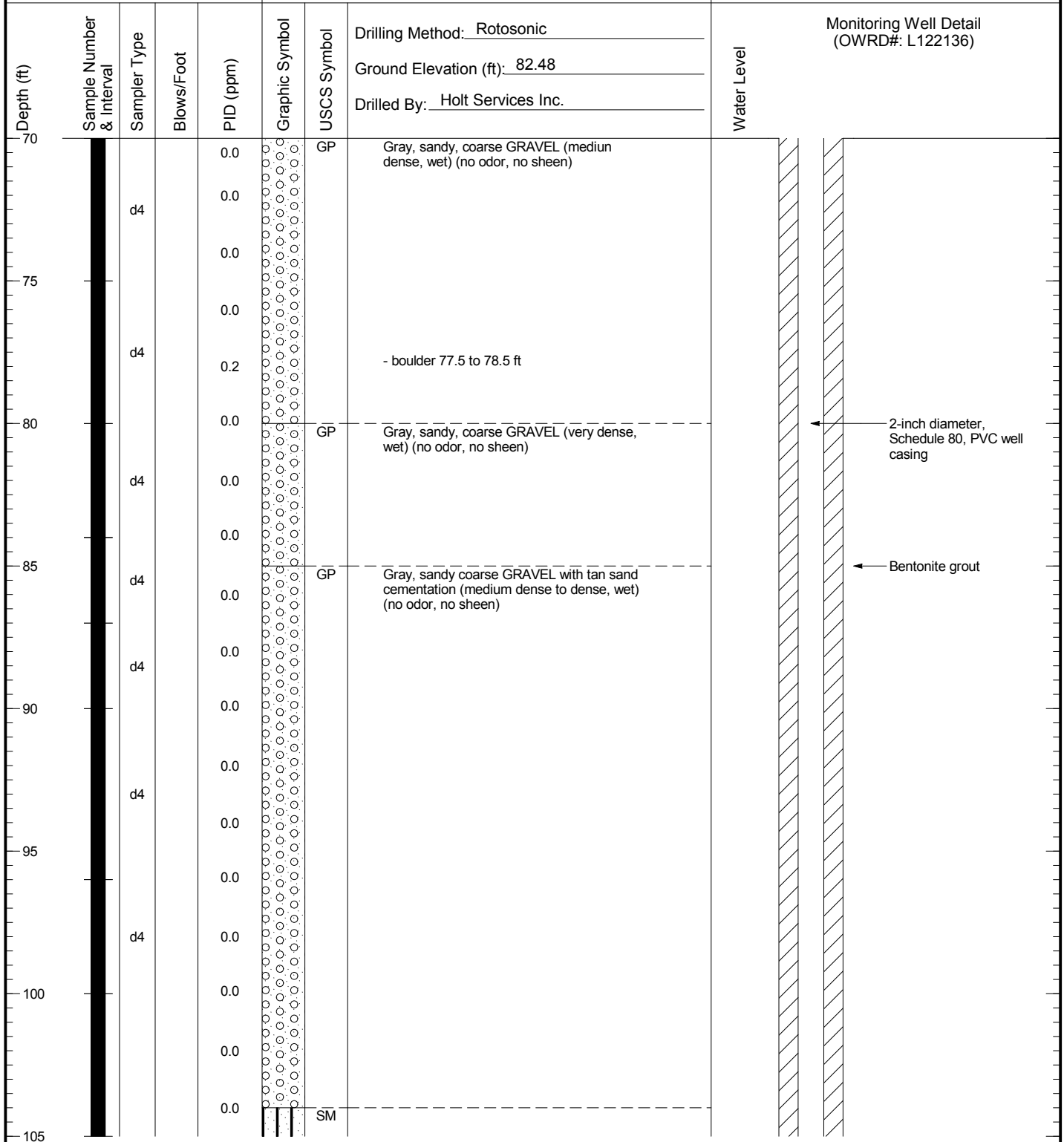
LANDAU ASSOCIATES

Boeing of Portland
Gresham, Oregon

Log of Monitoring Well BOP-7d

Figure
A-2
(2 of 5)

BOP-7d



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

25116117.110 4/10/17 \\PORTLAND1\DATA\MODELING\GINT\PROJECTS\BOEING\025116.117.110.GPJ WELL LOG

LANDAU ASSOCIATES

Boeing of Portland
Gresham, Oregon

Log of Monitoring Well BOP-7d

Figure
A-2
(3 of 5)

BOP-7d

Drilling Method: Rotosonic
Ground Elevation (ft): 82.48
Drilled By: Holt Services Inc.

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Profile	Water Level	Monitoring Well Detail (OWRD#: L122136)
105		d4		0.0		SM	Dark gray, gravelly, fine SAND with silt (dense, moist) (no odor, no sheen)		
				0.0		GP	Gray, sandy, fine to coarse GRAVEL (medium dense to dense, wet) (no odor, no sheen)		
				0.0					
110				0.0		SP	Gray, gravelly, fine to coarse SAND with silt; large cobbles with tan sand cementation (dense, wet) (no odor, no sheen)		
				0.0		GP	Light gray, sandy, fine GRAVEL with silt (dense, wet) (no odor, no sheen)		
115		d4		0.0					2-inch diameter, Schedule 80, PVC well casing
				0.0			- boulder 117 to 119 ft		
				0.0					
120				0.0					Bentonite grout
		d4		0.0					
125				0.0					
		d4		0.0					
				0.1					
130				0.0					
				0.0					
		d4		0.0					
135				0.0					
				0.1		GP-GM	Gray, sandy, coarse GRAVEL with silt (dense, wet) (no odor, no sheen)		
		d4		0.0					
140									Bentonite chips

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

25116117.110 4/10/17 \\PORTLAND1\DATA\MODELING\GINT\PROJECTS\BOEING\025116.117.110.GPJ WELL LOG

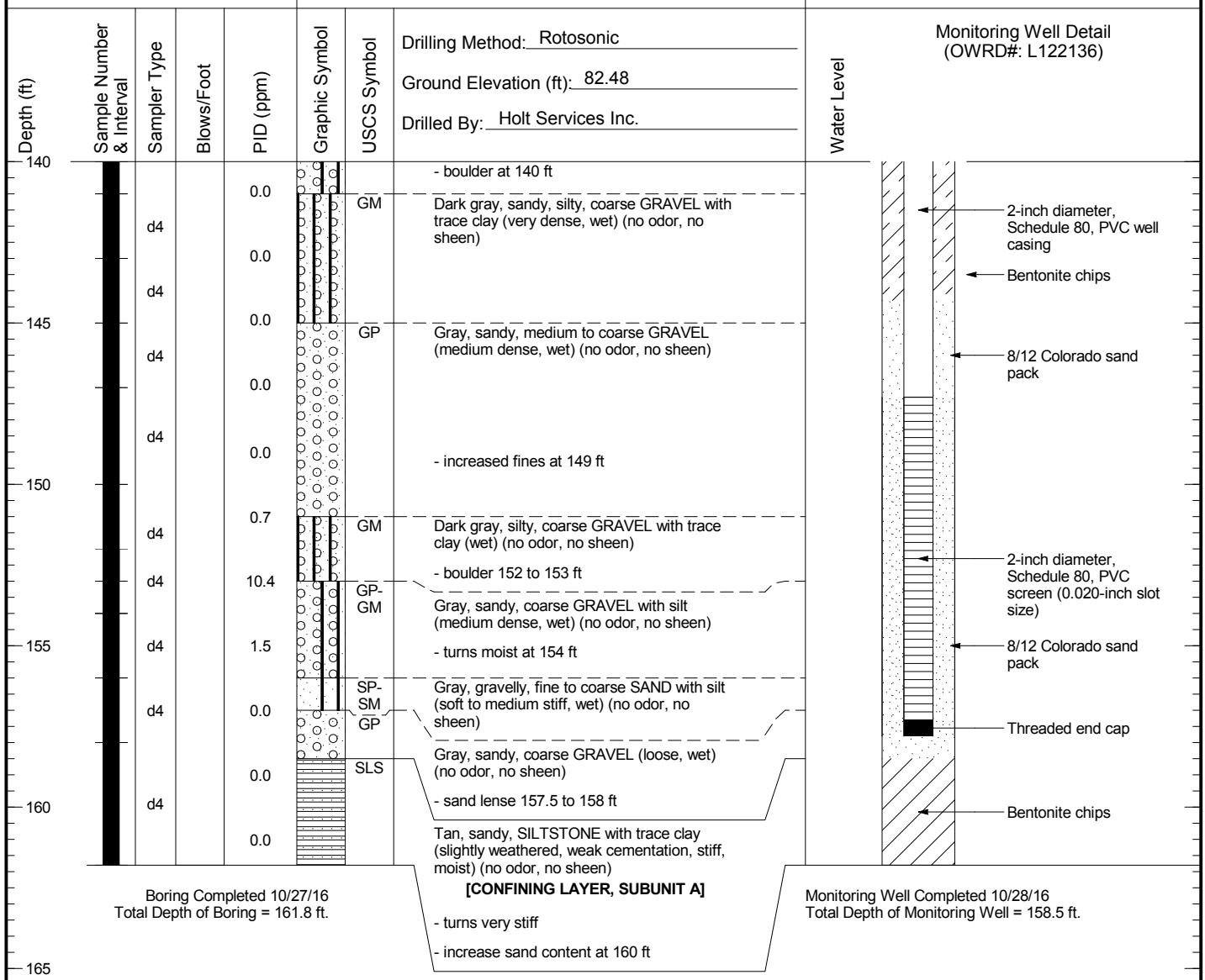
LANDAU ASSOCIATES

Boeing of Portland
Gresham, Oregon

Log of Monitoring Well BOP-7d

Figure
A-2
(4 of 5)

BOP-7d



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

25116117.110 4/10/17 \\PORTLAND1\DATA\MODELING\GINT\PROJECTS\BOEING\025116.117.110.GPJ WELL LOG

LANDAU ASSOCIATES

Boeing of Portland
Gresham, Oregon

Log of Monitoring Well BOP-7d

Figure
A-2
(5 of 5)

APPENDIX B

Institutional Controls Plan

INSTITUTIONAL CONTROLS PLAN
TROUTDALE GRAVEL AQUIFER
BOEING PORTLAND, GRESHAM, OREGON

December 20, 2005

Prepared for

The Boeing Company
Gresham, Oregon

Prepared by
Landau Associates, Inc. and The Boeing Company

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WORKER PROTECTION INSTITUTIONAL CONTROL	2
RESTRICTIVE COVENANT	3

EXHIBITS

- A Oregon Water Rights Division Letter
- B Internal Operating Instruction – Subsurface Excavation Procedure and Agency Contacts
- C Model Restrictive Covenant

LIST OF FIGURES

Figure	Title
1.	TGA Groundwater Use Control Area
2.	Soil Source Control Area
3.	Model Restrictive Covenant Area

INTRODUCTION

This document presents an Institutional Controls Plan (ICP) to be implemented as part of the selected corrective measures for the Troutdale Gravel Aquifer (TGA) at the Boeing Portland facility in Gresham, Oregon. Boeing is performing these corrective measures pursuant to a 1994 Administrative Order on Consent (AOC) entered into by Boeing and the U.S. Environmental Protection Agency (Region 10) ("EPA"). This plan was prepared in accordance with *the Final Decision and Response to Comments for the Boeing Portland Facility Troutdale Gravel Aquifer* (EPA 1997) and the CMI Work Plan (Landau Associates 1997). This ICP will take effect upon approval by the lead agency under the AOC, currently EPA, and it will remain in effect until Boeing and the lead agency agree that it can be terminated. Further, this ICP is intended to be used in conjunction with the Health and Safety Plan that has been developed for the facility for remedial activities associated with the TGA corrective measures (Landau Associates 1998).

The selected corrective measures of the ICP include the implementation of both a **groundwater use institutional control** to restrict the potential ingestion of TGA groundwater exceeding maximum concentration limits (MCLs) of relevant contaminants and a **worker protection institutional control** to restrict the potential exposure of workers during surface/subsurface disturbance at the facility. A model **Restrictive Covenant** for the Boeing Portland facility property is also included. These institutional controls are described in the following sections.

GROUNDWATER USE INSTITUTIONAL CONTROL

The objective of the groundwater use institutional control is to restrict the potential ingestion of TGA groundwater that contains volatile organic compounds (VOCs) at concentrations exceeding applicable maximum contaminant levels (MCLs) in the vicinity of the Boeing Portland facility. The VOC plume is present under the Boeing Portland facility and to the north of the facility as shown on Figure 1. If new data from groundwater monitoring indicate that the horizontal or vertical extent of the VOC plume has changed, then the Figure 1 map will be re-drawn accordingly. The groundwater use institutional control described in this section will apply to the area defined on Figure 1 as the groundwater use control area. The groundwater use control area encompasses the entire VOC plume and extends north and west to areas outside of the plume to prevent VOCs from migrating to extraction wells operating near the edge of the plume.

The objective of the groundwater use institutional control will be achieved by implementing the following two measures:

Well Abandonment: Existing groundwater extraction wells within the groundwater use control area, except those wells owned and operated by Boeing for purposes of conducting remediation activities, will be abandoned in accordance with applicable Oregon water well regulations. This measure is currently in place and has been completed with the abandonment of four wells on the Cerighino property located to the north of NE Sandy Boulevard, the Parker well located to the north of NE Sandy Boulevard and east of the Cerighino property, two Rockwood Water District wells located between NE Sandy Boulevard and the Columbia Slough along NE 185th Avenue, and three water supply wells located on Boeing property, and with the conversion of remaining Boeing water supply wells to monitoring wells.

Well Installation Restrictions: Upon approval of this ICP by EPA, EPA will evaluate proposed installation of new wells in the groundwater use control area in accordance with the approval/submittal procedures outlined in Section 10 of the AOC. Upon termination of the AOC by mutual consent of EPA and Boeing, the proposed installation of any new wells in the groundwater use control area will be evaluated in accordance with a process established between the Oregon Department of Water Resources, Water Rights Division ("WRD") and the Oregon Department of Environmental Quality ("DEQ"). This process is set out in a letter dated February 12, 1999 from WRD to DEQ, and attached to this ICP as Exhibit A. The process will regulate groundwater use in the area by granting each agency the authority to review any proposed actions such as permit applications, water rights applications, and start cards for well constructors. Both agencies would have the opportunity to deny or object to the application of any party intending to use the TGA for water supply purposes within the groundwater use control area. The well installation restrictions implemented through this ICP process will remain in place until it has been determined that groundwater concentrations in the groundwater use control area (or portions thereof) no longer exceed applicable MCLs and approval to terminate the ICP process and remove the restrictions has been obtained from the lead agency.

WORKER PROTECTION INSTITUTIONAL CONTROL

The objective of the worker protection institutional control is to restrict the potential exposure of workers during surface/subsurface disturbance at the facility. Because all suspected VOC source areas are located on the Boeing Portland facility south of NE Sandy Boulevard, this institutional control will only apply to workers and work activities within that portion of the facility property. These VOC source areas are depicted on Figure 2. If new information or data indicate that the source areas have a different configuration, then their depiction on Figure 2 will be changed accordingly.

The objective of the worker protection institutional control will be achieved by: a) following the Health and Safety Plan developed for remedial activities at the facility (Landau Associates 1998), and b) implementing a facility Internal Operating Instruction (IOI) that addresses procedures to be followed for

activities involving surface/subsurface disturbance of potentially contaminated areas of the facility as shown on Figure 2. The IOI has been developed by Boeing Portland personnel and is presented in Exhibit B. Because Boeing has full control over access to the applicable portion of the Boeing Portland facility property, implementation of this procedure will provide the protection intended by this institutional control. The procedure includes the following:

- Facility map identifying general contaminant source areas
- Internal notification and agency notification procedures
- Excavation Monitoring Log
- Source Area Excavation Notification Form
- Proper disposal of excavated material

Implementation of this procedure will begin upon approval of this ICP. For all excavations, notification of the Lead Agency shall be performed per Exhibit B (Internal Operating Instruction). In addition, any excavations in connection with the existing AOC remedy will follow the notification and approval procedure outlined in Section 10 of the AOC. The Lead Agency will respond to submittals within 10 working days.

RESTRICTIVE COVENANT

Should Boeing sell or transfer any legal interest in all or a portion of the facility property south of NE Sandy Boulevard, identified by the polygon depicted on Figure 3, then a restrictive covenant would be applied to the property at the time of the sale or lease, if such sale or lease occurs prior to the earlier of the termination of the ICP or remediation of all source areas that are part of the corrective measures program and identified on Figures 1 and 2. The restrictive covenant would require that the protections afforded by the groundwater use and worker protection institutional controls become the responsibility of the new property owner or property lessee. A model of the restrictive covenant is provided in Exhibit C. The new owner or lessee shall provide prior notification to the lead agency for any soil excavation work to be accomplished inside the polygonal area shown on Figure 3. A legal description of the polygonal area will be prepared if a restrictive covenant is required.

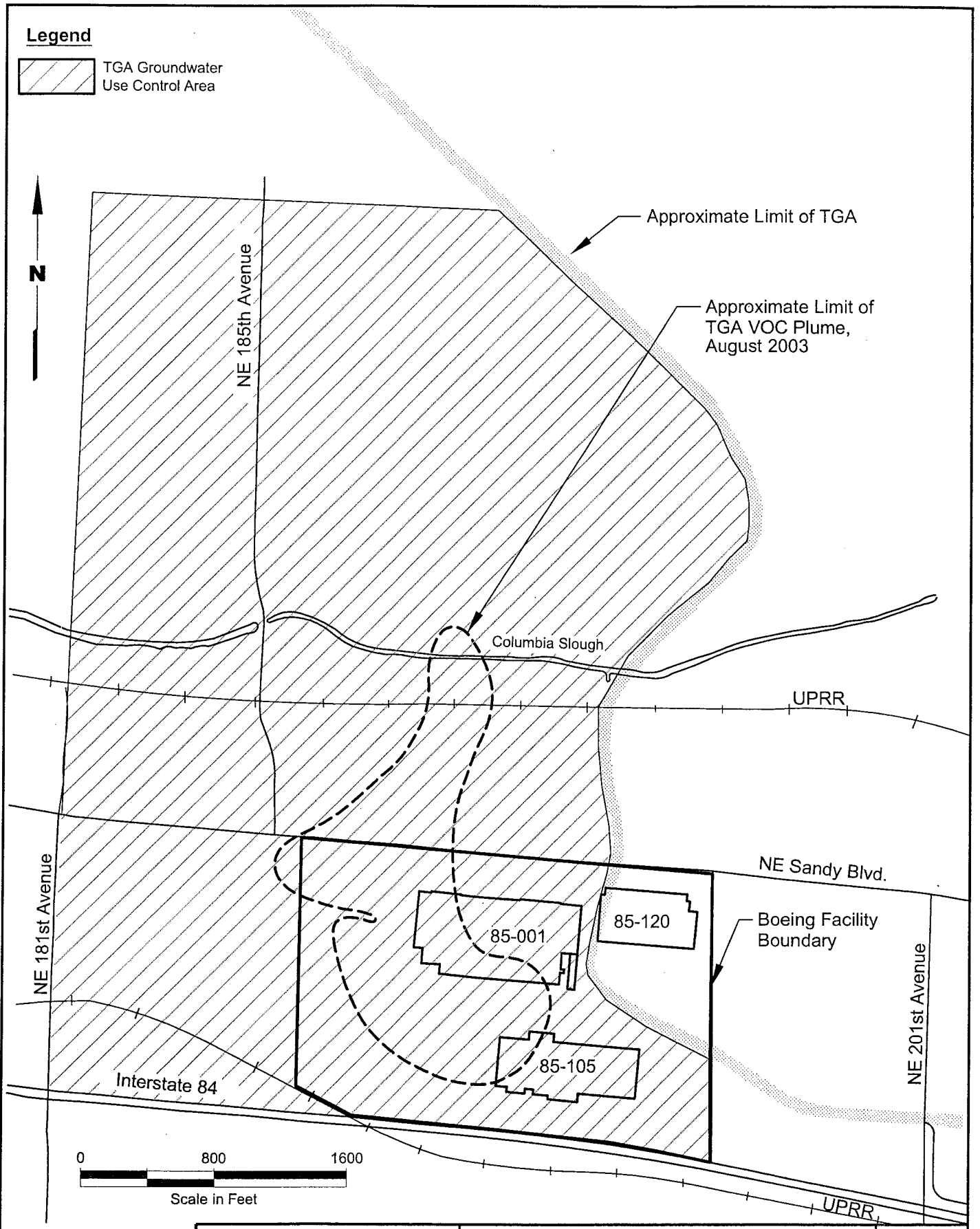
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EPA. July 1997. *Final Decision and Response to Comments for the Boeing Portland Facility Troutdale Gravel Aquifer.*

Landau Associates. November 1997. *Work Plan, Troutdale Gravel Aquifer, Corrective Measures Implementation, Gresham, Oregon.* Prepared for The Boeing Company.

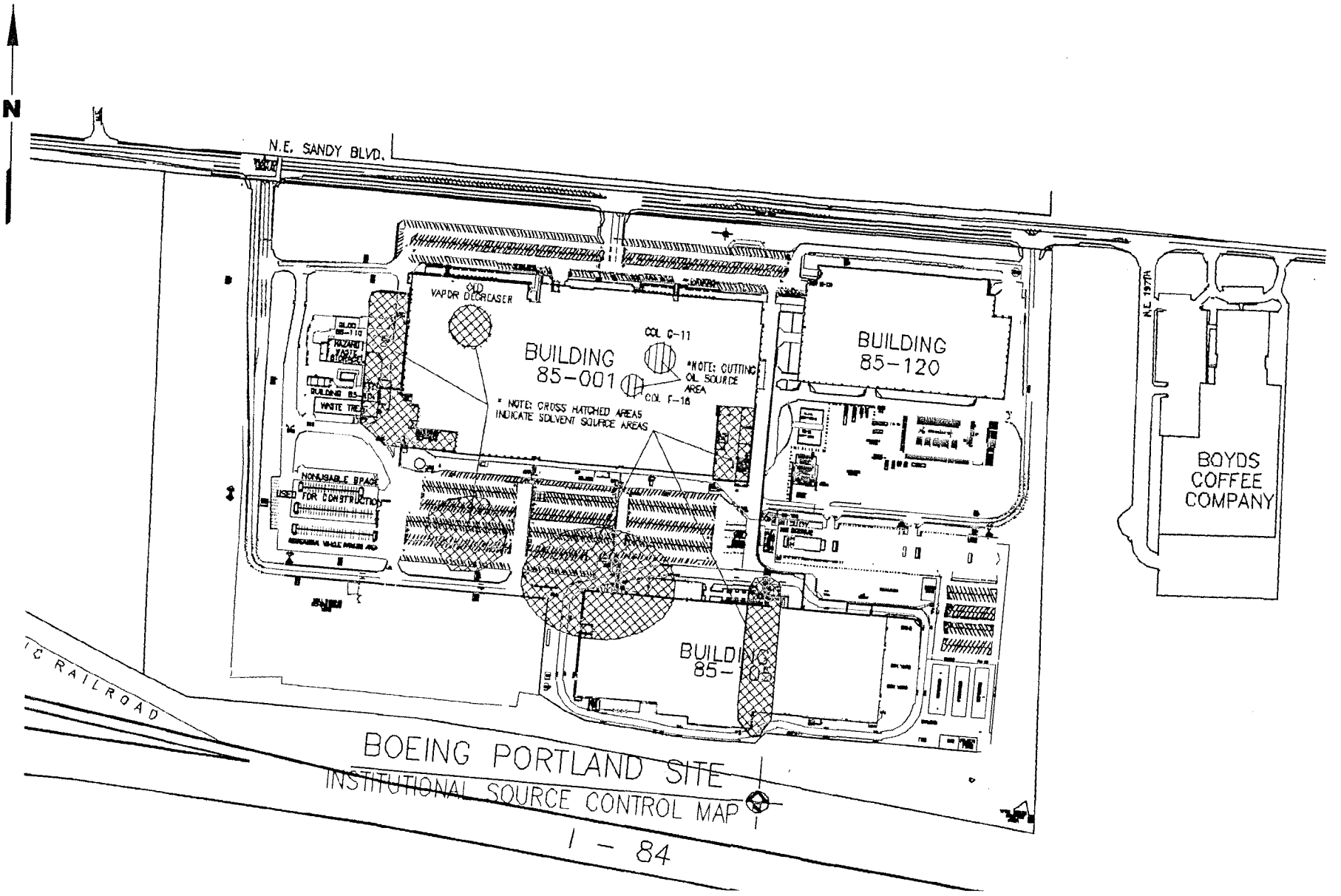
Landau Associates. February 23, 1998. *Health and Safety Plan, TGA and TSA Groundwater Remediation, TGA Corrective Measure and TSA Remedy, Boeing Portland, Gresham, Oregon.* Prepared for the Boeing Company.



Boeing Portland/Institutional Controls Plan | V:\025\116\180\Final TGA ICP\Fig1_3.dwg (A) "Figure 1" 12/21/2005

LANDAU ASSOCIATES

Boeing Portland	**TGA Groundwater Use Control Area**	Figure 1

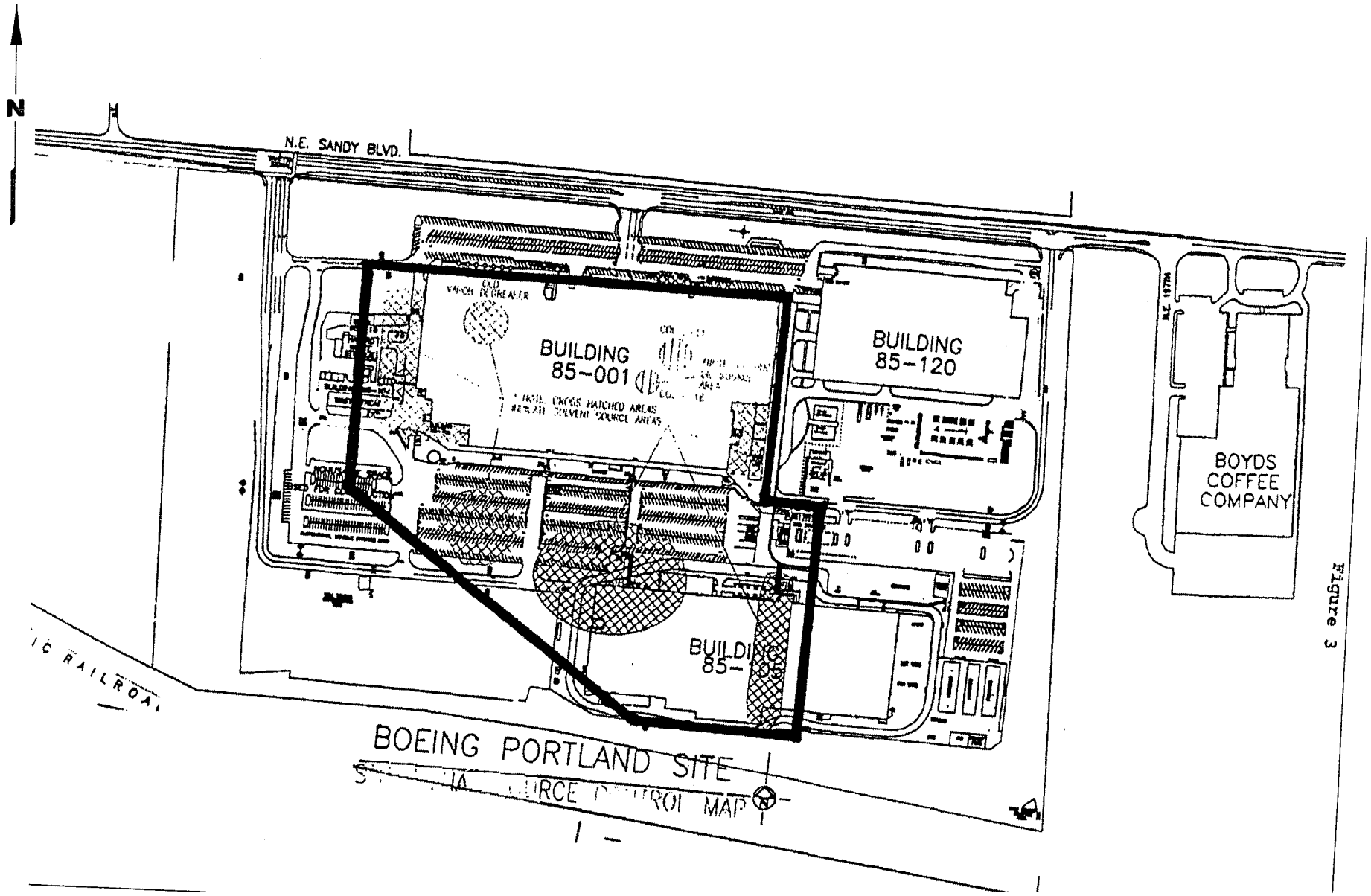


LANDAU ASSOCIATES

0 400 800

Scale in Feet

Boeing Portland	**Soil Source Control Area**	Figure 2



0 400 800
Scale in Feet

LANDAU ASSOCIATES

Boeing Portland	**Model Restrictive Covenant Area**	Figure 3

EXHIBIT A

Oregon Water Rights Division Letter

EXHIBIT A

Oregon
John A. Kitzhaber, M.D., Governor

Water Resources Department
Commerce Building
158 12th Street NE
Salem, OR 97310-0210
(503) 378-3739
FAX (503) 378-8130

February 12, 1999

DEPT OF ENVIRONMENTAL QUALITY
RECEIVED

FEB 17 1999

NORTHWEST REGION

Bruce Gilles
Department of Environmental Quality
2020 SW 4th, Suite 400
Portland OR 97201

RE: Groundwater Application Processing
Subject Area: Township 1N, 3E, Sections 20, 21, 28, and 29

Dear Mr. Gilles:

I have discussed the idea of an MOU between DEQ and WRD on this particular issue with the Director. We want to do everything we can to help you in your efforts to limit additional groundwater development that might have negative impact on groundwater quality at this particular site - or any other site. The Department recognizes DEQ as the experts on groundwater quality issues and the appropriate means to limit its effects on the groundwater resources of the state. However, we do not feel that an MOU is necessary to allow you to comment or protest on applications.

Effective approximately three months ago, we have instituted a process that will allow you an opportunity to review initial reviews for groundwater applications filed in the subject area. Our water rights processing staff check every application that we review to see if it is a groundwater application in the subject area. If we come across any such files, we will make sure that DEQ has an opportunity to comment on the initial review. We will notify you (via email, fax or mail) when the initial review is mailed to the applicant. This will give you a minimum of 45 days in which to comment on the proposed use before we begin reviewing the file in preparation of a proposed final order. We will make every effort possible to not put DEQ in a position where you disagree with our proposed final order. But if you do disagree, the law allows for DEQ to file a protest. I trust this will satisfy your needs on the subject of application processing.

The Department cannot share with you copies of start cards for new well construction. You can look at well logs via our web site: www.wrd.state.or.us. Please feel free to contact Dave Jarrett at extension 220 if you have more questions on well logs and their availability.

If you have any questions, please do not hesitate to give me a call. I can be reached toll free within Oregon at 1-800-624-3199 extension 268.

Sincerely,

Dwight French
Acting Administrator
Water Rights Division

cc: Juno Pandian, Watermaster
Water Rights Application Processing Staff
Dave Jarrett, Enforcement

EXHIBIT B

Internal Operating Instruction - Subsurface Excavation Procedure and Agency Contacts

SME: John Rusoff

BP-1390-033
Effective Date
June 17, 2005

Subsurface Excavation Procedure

Purpose/Summary

This IOI details the responsibilities and processes involved in excavations on site.

Supersedes

None

Applies to

Portland All

Role(s) affected

SHEA will implement, maintain, approve and notify applicable parties.

Facilities or Production will complete and follow the directions specified in the excavation permit and other instructions from SHEA.

Maintained by

SHEA

Authority Reference(s)

Policy 4, "...Safety, Health and Environmental Affairs...."

Approved by

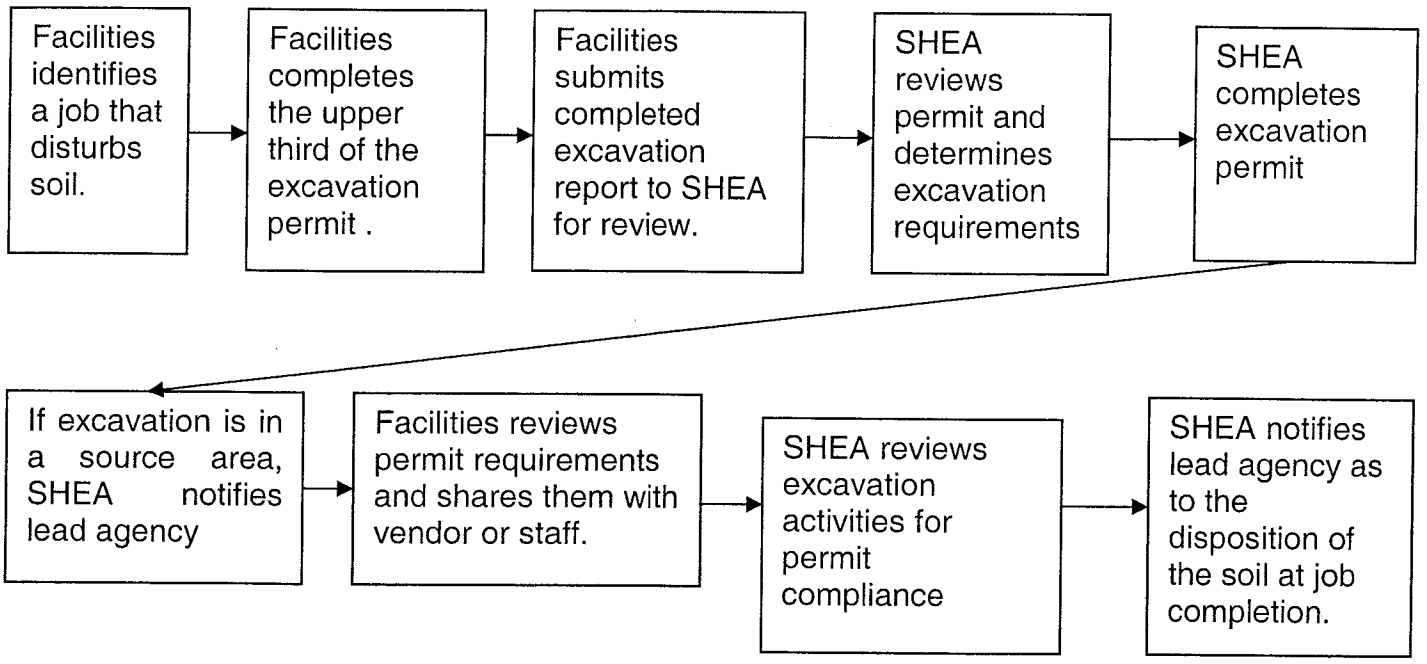
Steve Mason, SHEA Manager

A. Scope

This IOI delineates the process of initiating, reviewing, approving, and notifying the lead agency for subsurface excavations at Boeing Portland.

Input	Output:
Any Subsurface Excavation	Completed Excavation Permit
From	**To**
Facilities	Facilities

B. Process Flow



C. Process Steps

Once Facilities identifies a project that involves an excavation activity, Facilities will complete the upper portion of the excavation permit form and submit the form

the SHEA for review and approval. SHEA will review the form, complete the Statement of Approval, and Excavated Material Disposition. Facilities will post and comply with the directions noted on the excavation permit. SHEA will complete initial and final update to the Lead Environmental agency for excavations in a source area.

1. Project Evaluation

Input: Construction Manager Receives a Project

Output: Construction Manager Determines if an Excavation Permit is Required.

The construction manager determines if the project will disturb soil, or will expose soil that is beneath concrete or asphalt.

1.1 Permit Completion

Once the construction manager determines an excavation permit is required, they will complete the upper third of the permit form. They may attach drawings or maps to help illustrate the project scope.

Step	Action
a.	Determine if project disturbs soil or exposes soil which requires an excavation permit
b.	Complete upper portion of Excavation Permit. Information required includes; Building and Column numbers, depth and area of excavation.
c.	Attach drawings and or maps to assist in convening scope of project and location of construction.
d.	Forward completed permit to SHEA Focal for review and approval.

2.1 Review of Permit

SHEA will evaluate for completeness of the upper third of the excavation permit.

Step	Action
a.	Review the Facilities submitted permit and any associated attachment (maps, machine drawings, or other attachments).
b.	Clarifications (if required) will be requested from Facilities in order verify the scope and the location of the project.

2.2 Statement of Approval

SHEA will determine if the excavation is taking place in a source area, specify special considerations required to proceed with the excavation, specify if a Photo Ionization Meter survey, Capping or Sealing activities are required, indicate if HAZWOPER Safety Plan requirements apply, and specify if the Lead Agency is required to be notified of the excavation plans.

Step	Action
a.	Determine if the excavation is in or close to a source area and communicate this determination in Statement of Approval.
b.	Specify any specific actions that would be required to be completed during the excavation process.
c.	Denote requirements such as utilizing a Photo Ionization Meter, Capping or Sealing the excavation, complete a HAZWOPER safety plan.
d.	Notify Lead Agency if the excavation takes place in a known source area attaching maps or drawings of the building for review by the Lead Agency with likely sample points.
e.	Evaluate requirements for monitoring or mitigating Boeing employee exposures with SHEA safety staff.

2.3 Excavated Material Disposition

SHEA will state the requirements for concrete, asphalt, soil, and any debris removed during the excavation project. SHEA will also evaluate and stipulate sampling requirements the soil if the excavation is in or near a Source area or SHEA determines that sampling is required.

Step	Action
a.	Specify whether the material should be containerized and specify the container type.
b.	Review sample results and make a waste determination.
c.	Specify specific material handling and disposal requirements for all environmental media.
d.	Sign the completed excavation form and provide a yellow posting copy for Facilities to sign.
e.	Complete Lead Agency notification form if required and attach maps that include sample locations and completed analytical reports.
f.	Up date the source area map if sample data indicates a change in the area of contamination.

3.0 Implementation of Excavation Permit

Facilities will evaluate, sign, and comply with the requirements stipulated on the excavation permit.

Step	Action
a.	Evaluate and understand the SHEA requirements for the excavation permit. Call SHEA Focal for clarification if required.
b.	Sign the completed excavation permit.
c.	Copy completed excavation permit on to a yellow sheet of paper for posting at excavation location.
d.	Convey excavation requirements to contractor to insure that contractor is aware and capable of following requirements in the excavation permit.

3.1 Permit Compliance Review

SHEA will review compliance with the permit requirements for duration of the excavation.

Step	Action
a.	SHEA will review excavation operations to insure that the permit requirements are observed by Facilities or their contractor.
b.	SHEA will evaluate changes to the excavation permit as needed based upon subsurface conditions encountered during the excavation and communicate them to the involved parties.

D. Acronyms

DEQ	Oregon Department of Environmental Quality
EPA	United States Environmental Protection Agency
ICP	Institutional Control Plan
SHEA	Safety Health and Environmental Affairs

E. Definitions

Site	The contiguous property of Boeing Portland (BOP) south of NE Sandy Blvd and excluding the property north of NE Sandy Blvd.
Excavation	Any act that disturbs soil, or exposes soil beneath concrete or asphalt surfacing.
Air Monitoring	Using an electronic device to measure organic air contaminants. Note: For use on site the air monitoring device must have a detection limit of 1 part per million or lower

Source Areas	Areas generally identified in ICP – Figure 2 where there is a high probability of finding soil contamination that could pose a threat to the health of employees or contractors.
Facilities	A general term for Work Place Services Group, Production , Remediation or another group required to submit an Excavation Permit.
Excavation Approval Form	A document (see Attachment 2) that must be completed by Facilities or other party and submitted to SHEA for review and approval of any excavation on the site.
Designated Contractor	A specifically identified and authorized non-Boeing employee that may sign the Excavation Approval Form on the behalf of the Facility's organization. The Facilities and SHEA managers both must agree to delegate this responsibility to the contractor.
SHEA Focal	A person designated by the site's Environmental Manager to complete the SHEA activities of this IOI and up date the process as needed.

F. References

(1) Source Area Map – ICP Figure 2
(2) Excavation Approval Form
(3) Excavation Monitoring Log
(4) Lead agency notification form

Boeing Portland Environmental Affairs/Facilities Excavation Approval Form

Date of Request _____

Location of planned excavation and description of activities: _____

Estimated Volume: _____ Units _____

Facilities Contact: _____ Mail Stop _____ Phone _____

Facilities or Designee Signature : _____ Date: _____
Signed

Facilities Supervisor _____ Mail Stop _____ Phone _____

Statement of Approval and Material Disposition. _____

Photo Ionization Meter	Yes	No
Capping or Sealing	Yes	No
HAZWOPER Safety Plan Required.	Yes	No
Lead Agency ICP Notification Required	Yes	No

Lead agency notified by _____ initals Date _____ .

Excavated material disposition: _____

Use off site for fill	Yes	No
Reuse On site	Yes	No
Dispose of at lined landfill	Yes	No

Reviewed and Approved by SHEA _____ Date: _____
Signed

Submit to SHEA 5P-91
attn.: John Rusoff

Attachment 2

Excavation Monitoring Log

Project Name: _____ Project Number _____

Instrument: _____

Instrument Calibration Date: _____

Date	Sampler	Time	Reading

Return Copy to SHEA Office at MS 5P-91

Attachment 3

Boeing Portland Source Area Excavation Notification To EPA

☐ **Initial Notification of Excavation Activities** **Excavation Date:** _____

☐ **Final Report**

Description and location of excavation:

Soil volume / depth of excavation: _____ / _____

Excavation Findings:

Soil Disposition.

Reviewed and submitted by _____ Date: _____

_____ Date: _____
Signature

EXHIBIT C

Model Restrictive Covenant

EXHIBIT C

MODEL RESTRICTIVE COVENANT

For the Boeing-Portland Facility in Gresham, Oregon

The _____Company [or Corporation, etc] is owner [lessee] of the former Boeing-Portland Facility ("Property") in Gresham, Oregon, as such property is legally described on Exhibit C.1 attached hereto. This Covenant shall specifically require the _____ Company to notify, and where necessary under applicable law (including without limitation, any applicable administrative orders), obtain approval from the lead agency of any excavation within the surveyed area of the Property depicted by the bold-lined polygon in Exhibit C.2 attached hereto. In addition, this Covenant shall require that the proposed installation of any groundwater wells within the groundwater use control area depicted in Exhibit C.3 attached hereto shall be evaluated in accordance with a process established between the Oregon Department of Water Resources, Water Rights Division ("WRD") and the Oregon Department of Environmental Quality ("DEQ"), as more particularly described in Exhibit C.4 attached hereto.

Each of the conditions described herein touches and concerns the Property, and this Covenant shall run with the land for all purposes and be binding upon _____ Company's successors, assigns, tenants, and lessees at the Property. The term of this Covenant shall commence upon the date on which it is recorded in the property records of Multnomah County, Oregon and shall end when it is released by the lead agency upon a showing by The Boeing Company and the _____ Company or current owner or lessee that the Covenant is not necessary to protect human health and the environment.

The _____ Company Dated: _____

By: _____

Its: _____

The U.S. Environmental Protection Agency Dated: _____

By: _____

Its: _____

State of _____
County of _____

On _____, 200__, before me, _____, a notary public in and for said state, _____ personally appeared before me and was personally known to me, or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed above, and acknowledged to me that s/he executed this document in his/her authorized capacity.

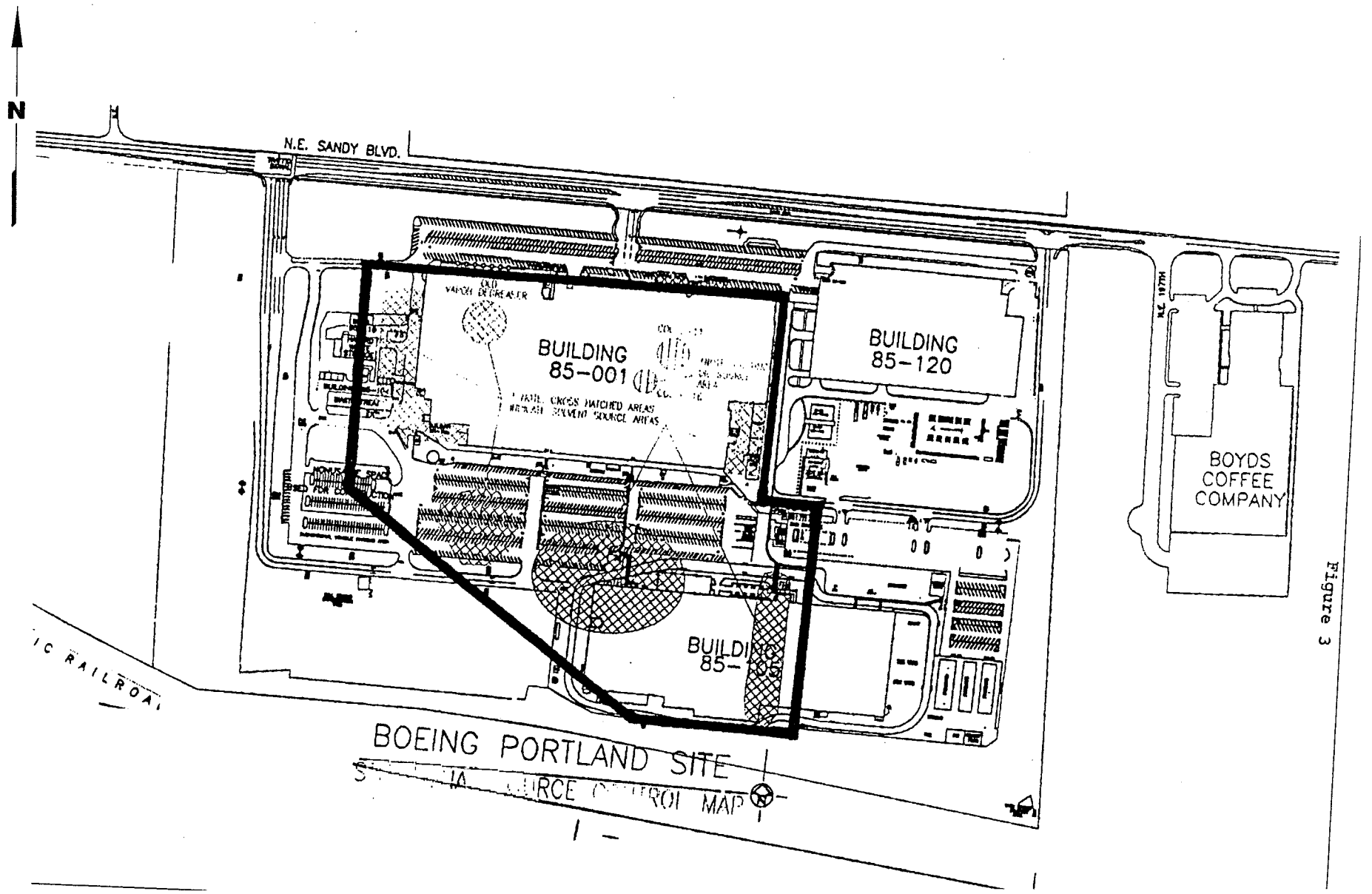
_____
Signature of Notary

[Seal]

Exhibit C.1

LEGAL DESCRIPTION

(Legal description of area to which Restrictive Covenant applies will be completed when determined at time of property transaction)



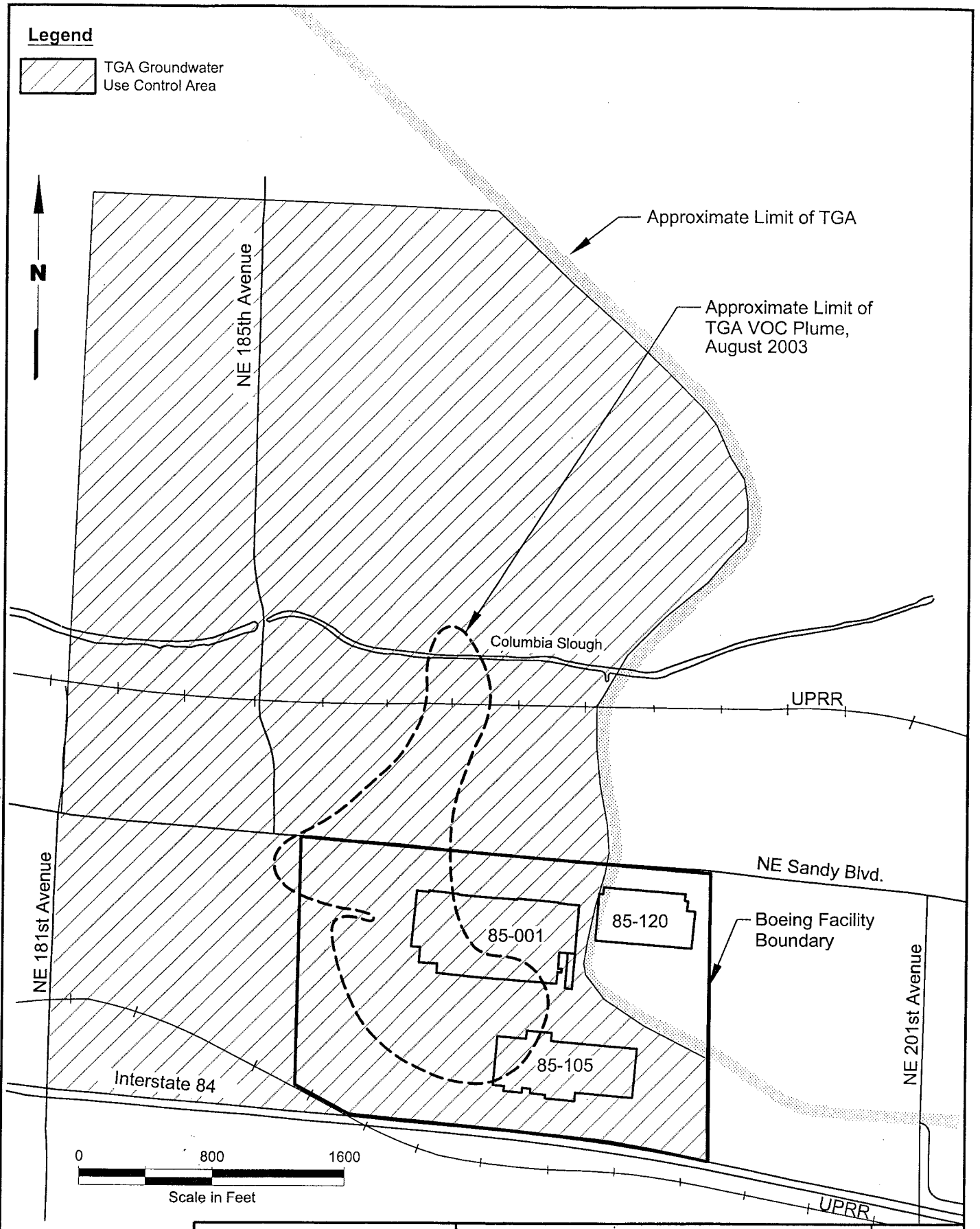
LANDAU ASSOCIATES

0 400 800
Scale in Feet

Boeing Portland

Model Restrictive Covenant Area

Exhibit C.2



Boeing Portland/Institutional Controls Plan | V:\025\116\180\Final TGA ICP\FigC2_C3.dwg (A) "Exhibit C.3" 12/21/2005

LANDAU ASSOCIATES

Boeing Portland	TGA Groundwater Use Control Area	Exhibit C.3

Exhibit C.4

Oregon

John A. Kitzhaber, M.D., Governor

Water Resources Department
Commerce Building
158 12th Street NE
Salem, OR 97310-0210
(503) 378-3739
FAX (503) 378-8130

February 12, 1999

DEPT OF ENVIRONMENTAL QUALITY
RECEIVED

FEB 17 1999

NORTHWEST REGION

Bruce Gilles
Department of Environmental Quality
2020 SW 4th, Suite 400
Portland OR 97201

RE: Groundwater Application Processing
Subject Area: Township 1N, 3E, Sections 20, 21, 28, and 29

Dear Mr. Gilles:

I have discussed the idea of an MOU between DEQ and WRD on this particular issue with the Director. We want to do everything we can to help you in your efforts to limit additional groundwater development that might have negative impact on groundwater quality at this particular site - or any other site. The Department recognizes DEQ as the experts on groundwater quality issues and the appropriate means to limit its effects on the groundwater resources of the state. However, we do not feel that an MOU is necessary to allow you to comment or protest on applications.

Effective approximately three months ago, we have instituted a process that will allow you an opportunity to review initial reviews for groundwater applications filed in the subject area. Our water rights processing staff check every application that we review to see if it is a groundwater application in the subject area. If we come across any such files, we will make sure that DEQ has an opportunity to comment on the initial review. We will notify you (via email, fax or mail) when the initial review is mailed to the applicant. This will give you a minimum of 45 days in which to comment on the proposed use before we begin reviewing the file in preparation of a proposed final order. We will make every effort possible to not put DEQ in a position where you disagree with our proposed final order. But if you do disagree, the law allows for DEQ to file a protest. I trust this will satisfy your needs on the subject of application processing.

The Department cannot share with you copies of start cards for new well construction. You can look at well logs via our web site: www.wrd.state.or.us. Please feel free to contact Dave Jarrett at extension 220 if you have more questions on well logs and their availability.

If you have any questions, please do not hesitate to give me a call. I can be reached toll free within Oregon at 1-800-624-3199 extension 268.

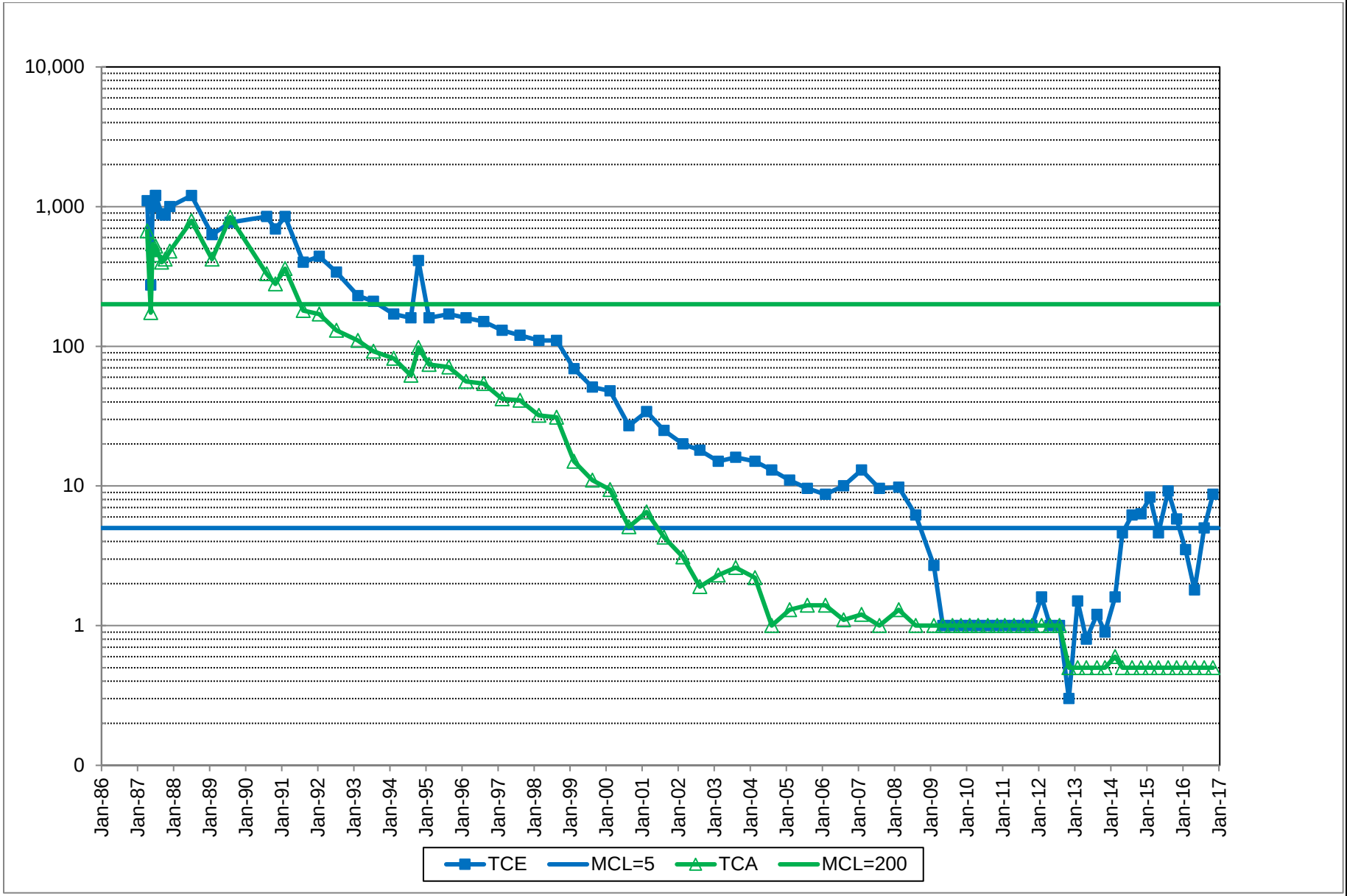
Sincerely,

Dwight French
Acting Administrator
Water Rights Division

cc: Juno Pandian, Watermaster
Water Rights Application Processing Staff
Dave Jarrett, Enforcement

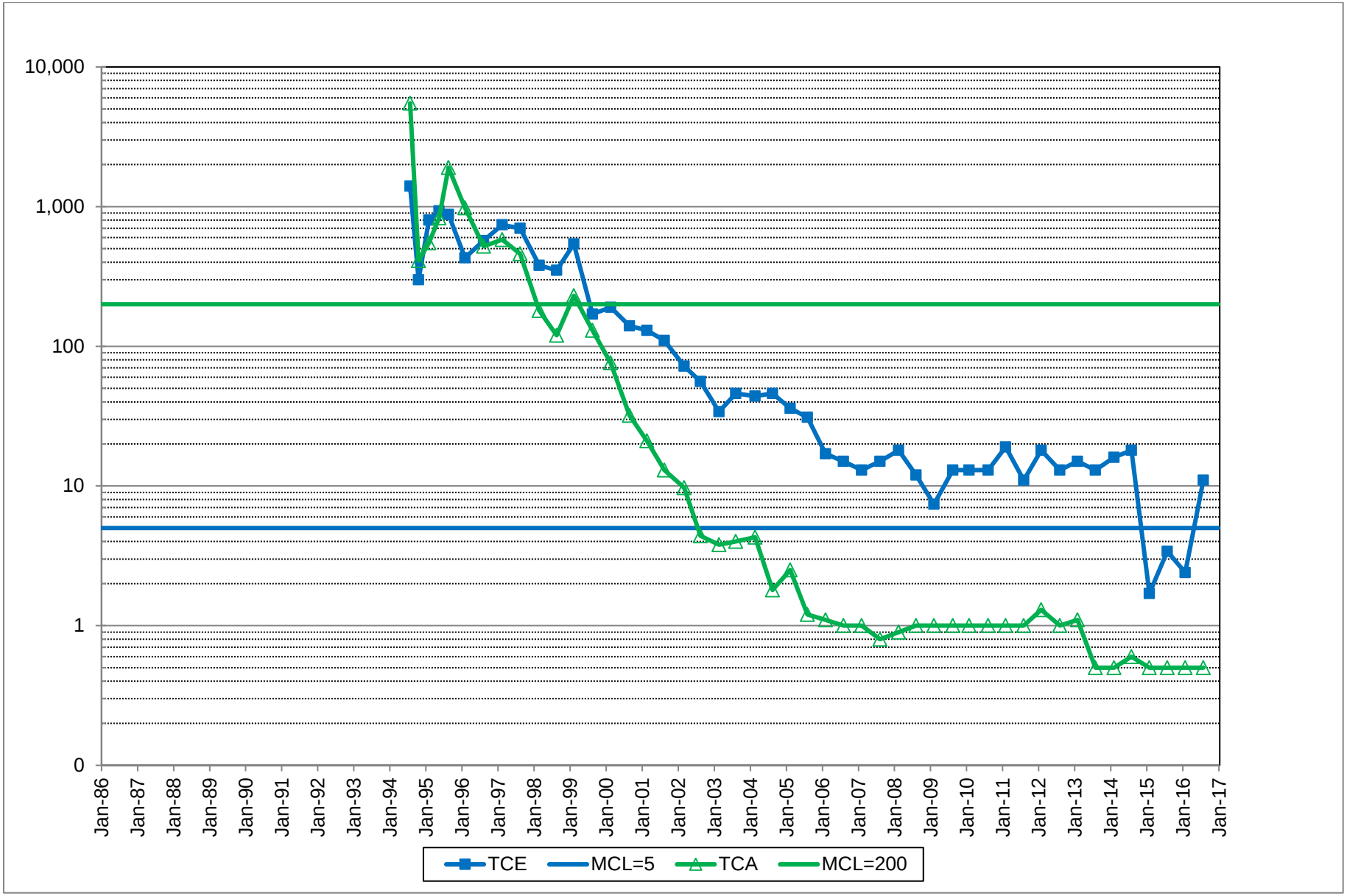
APPENDIX C

Time vs Concentration Plots



LANDAU ASSOCIATES

Boeing Portland Gresham, Oregon	**BOP-16(i) Time vs Concentration Through December 31, 2016**	Figure C-1

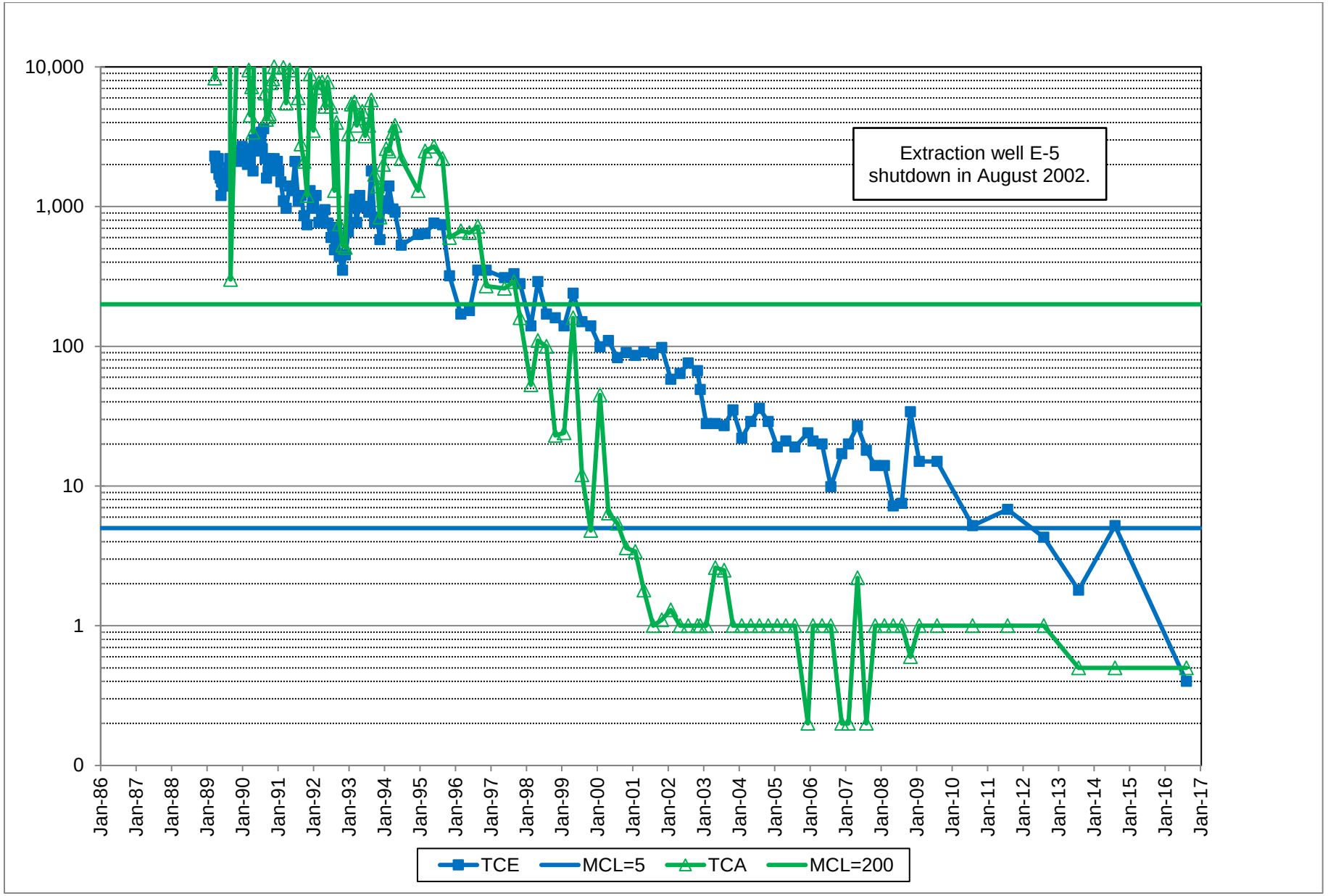


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

BOP-57(ia) Time vs Concentration Through December 31, 2016

Figure
C-2

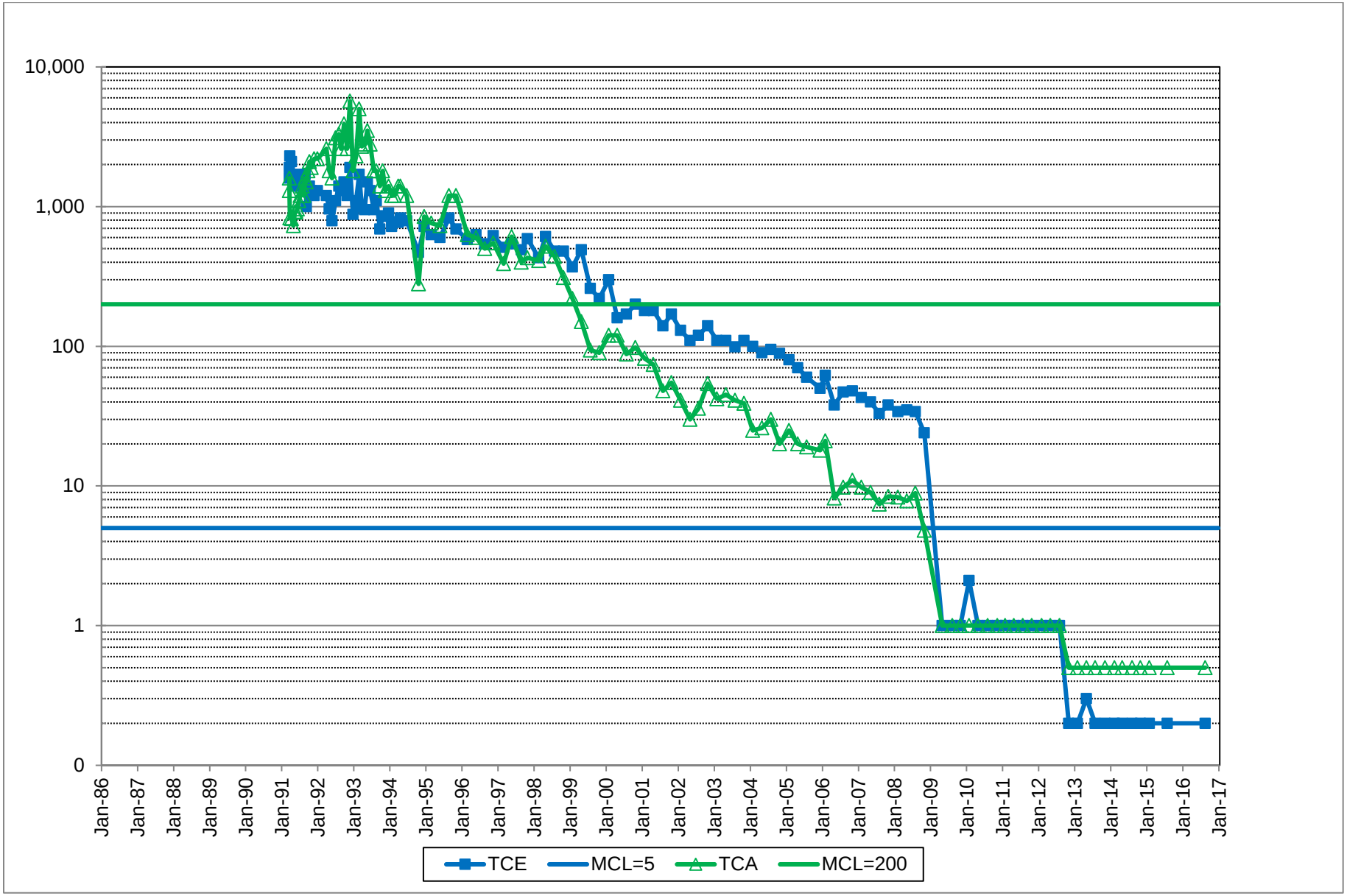


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

E-5 Time vs Concentration Through December 31, 2016

Figure
C-3

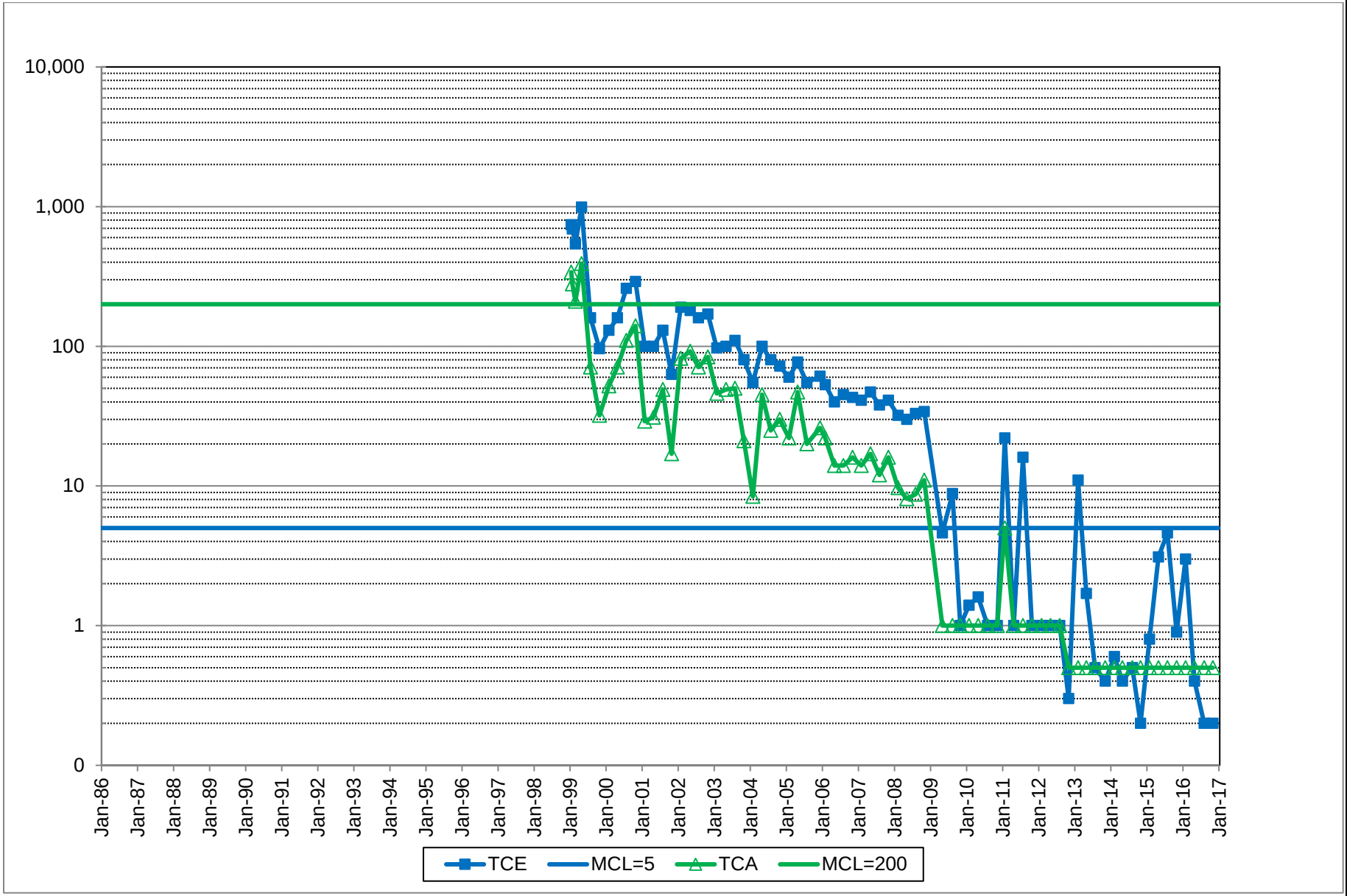


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

E-11 Time vs Concentration Through December 31, 2016

Figure
C-4

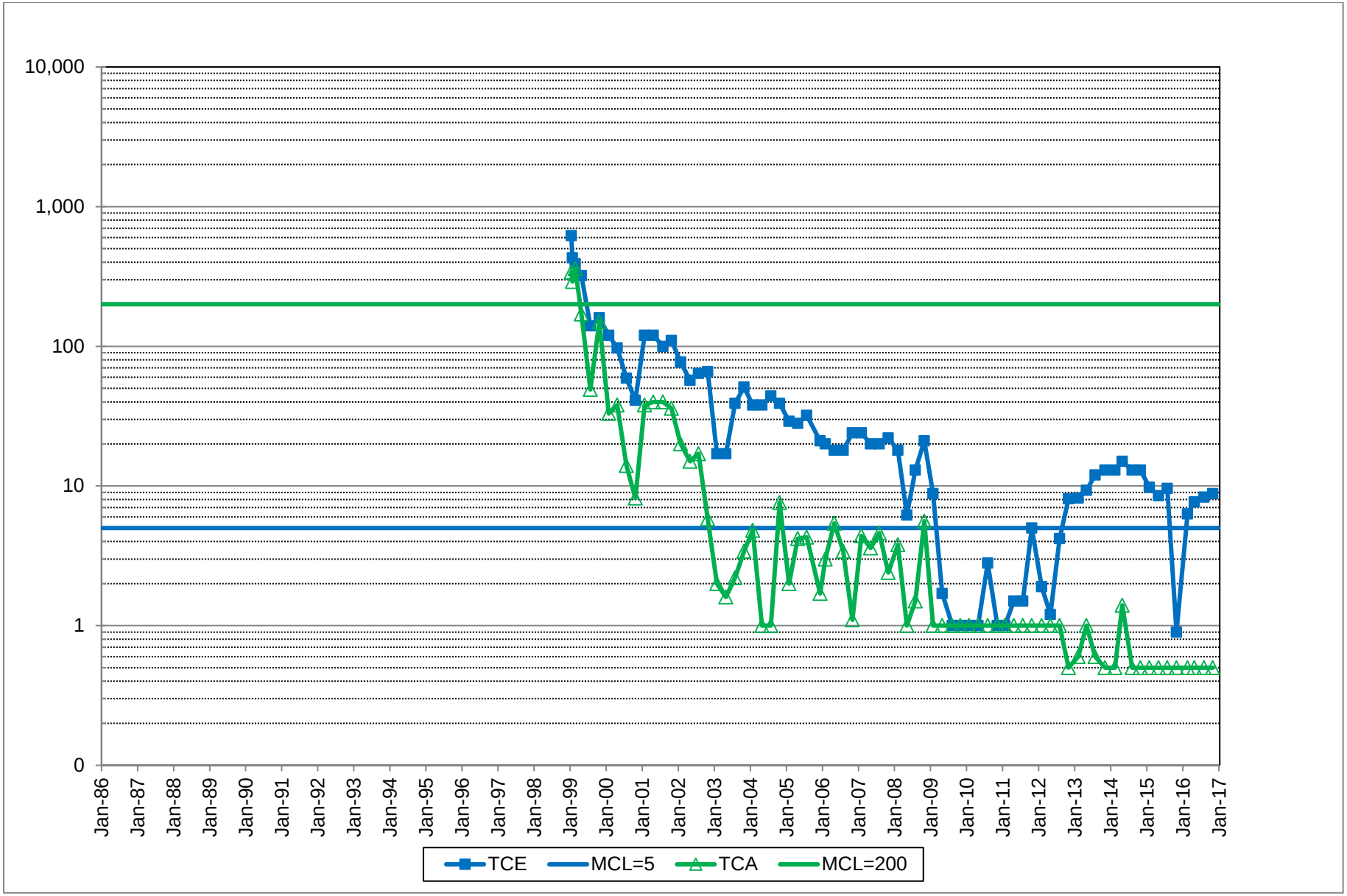


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

E-15 Time vs Concentration Through December 31, 2016

Figure
C-5

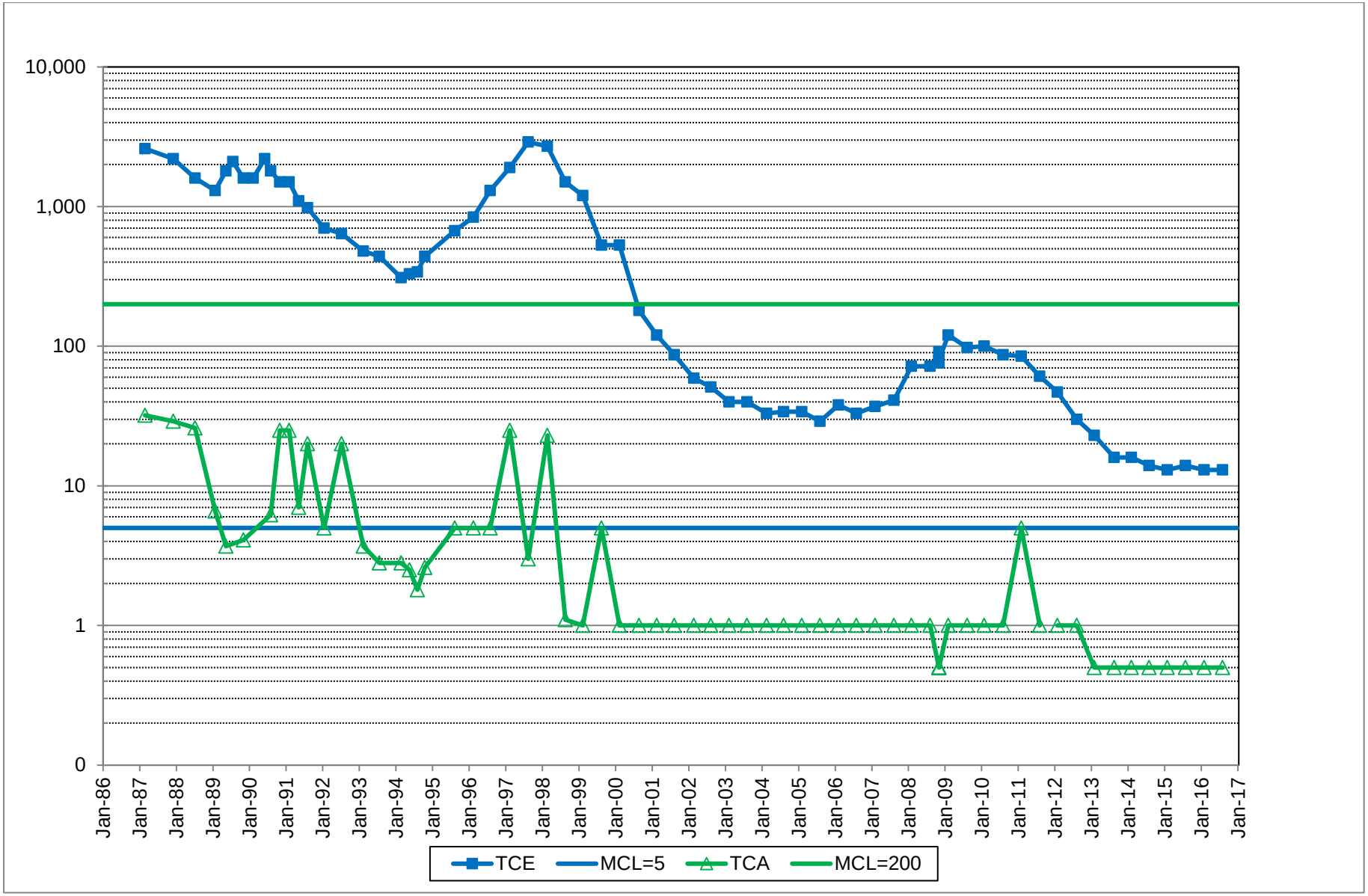


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

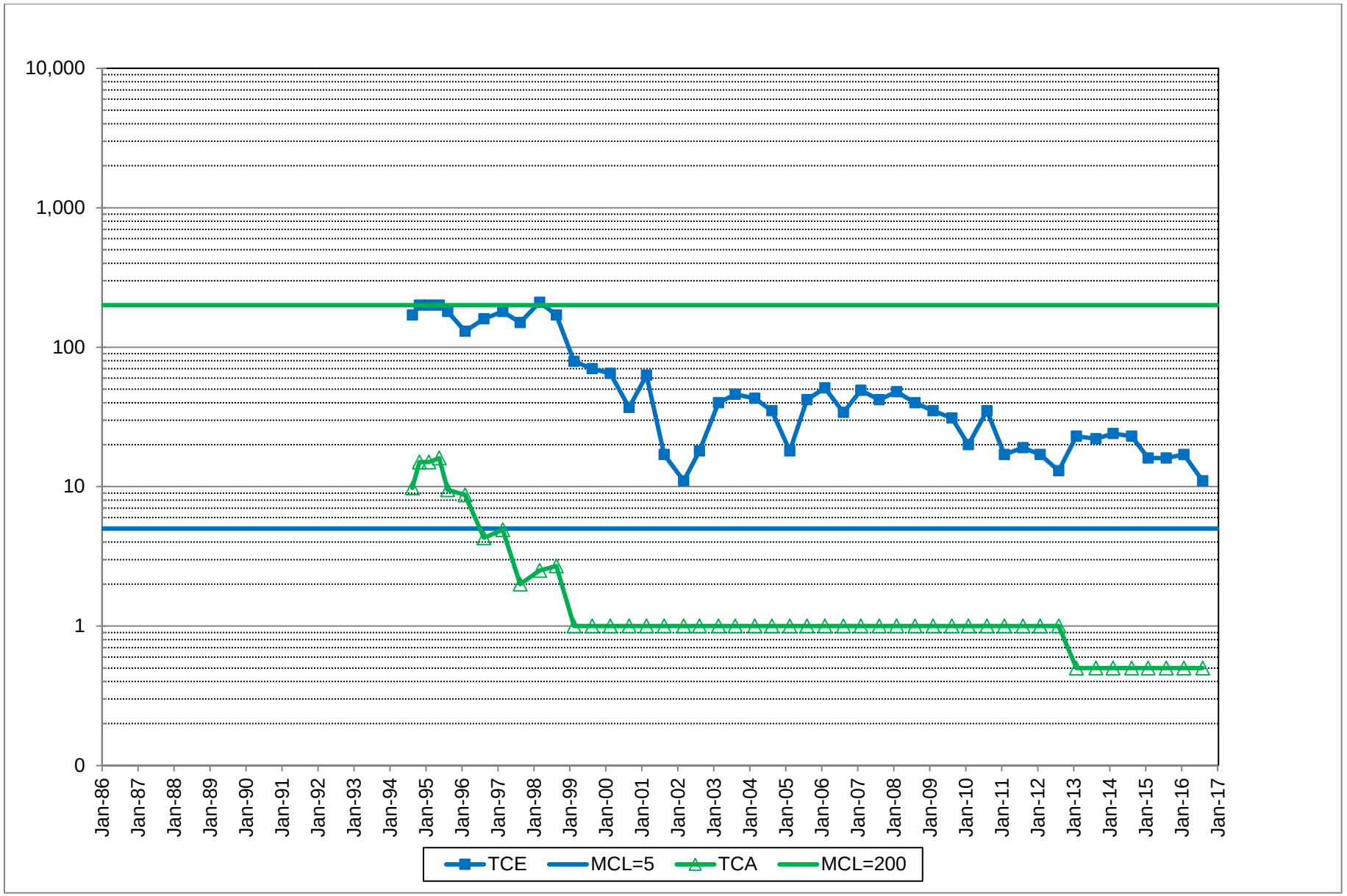
E-16 Time vs Concentration
Through December 31, 2016

Figure
C-6



LANDAU ASSOCIATES

Boeing Portland Gresham, Oregon	**BOP-10(i) Time vs Concentration Through December 31, 2016**	Figure C-7

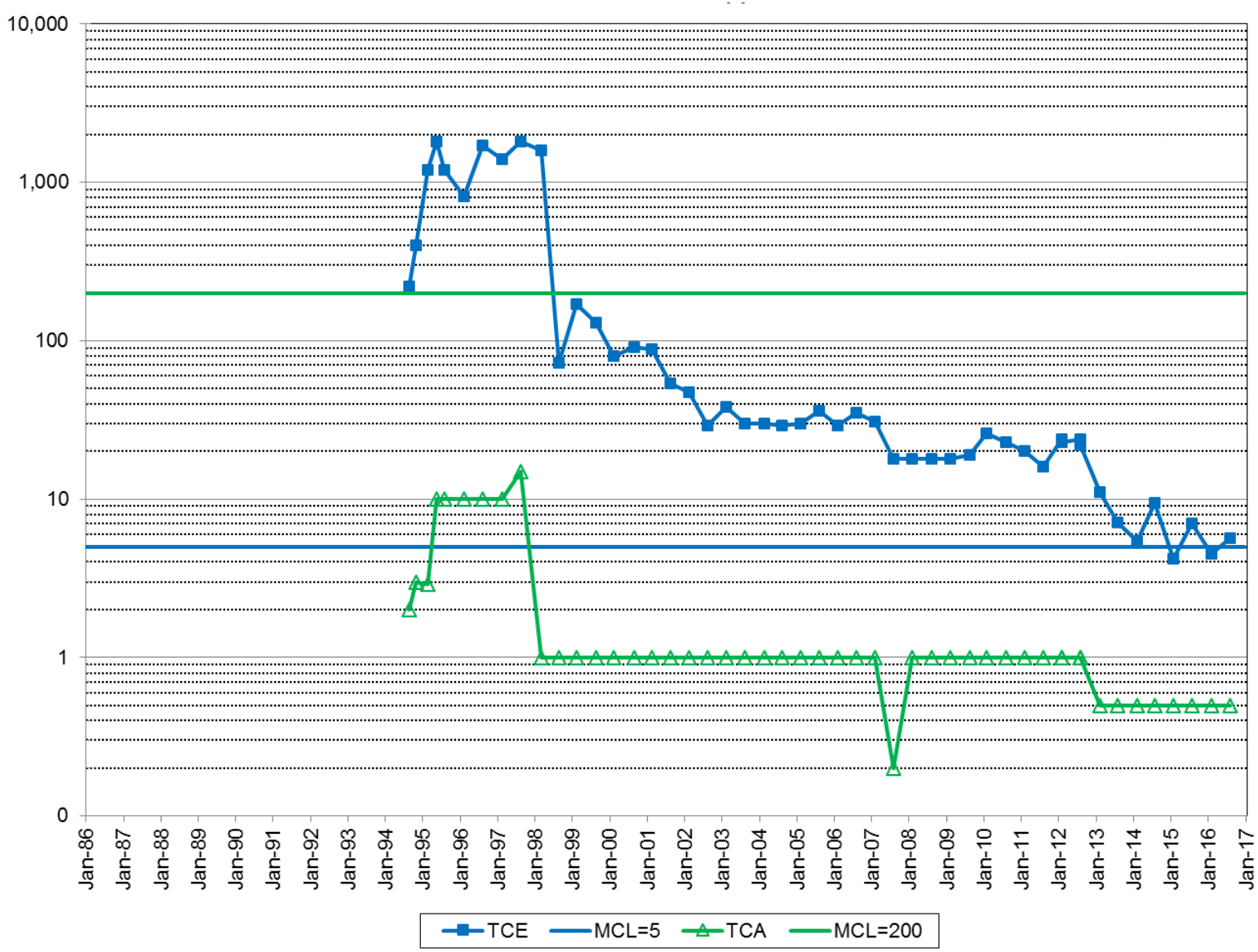


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

BOP-56(i) Time vs Concentration Through December 31, 2016

Figure
C-8

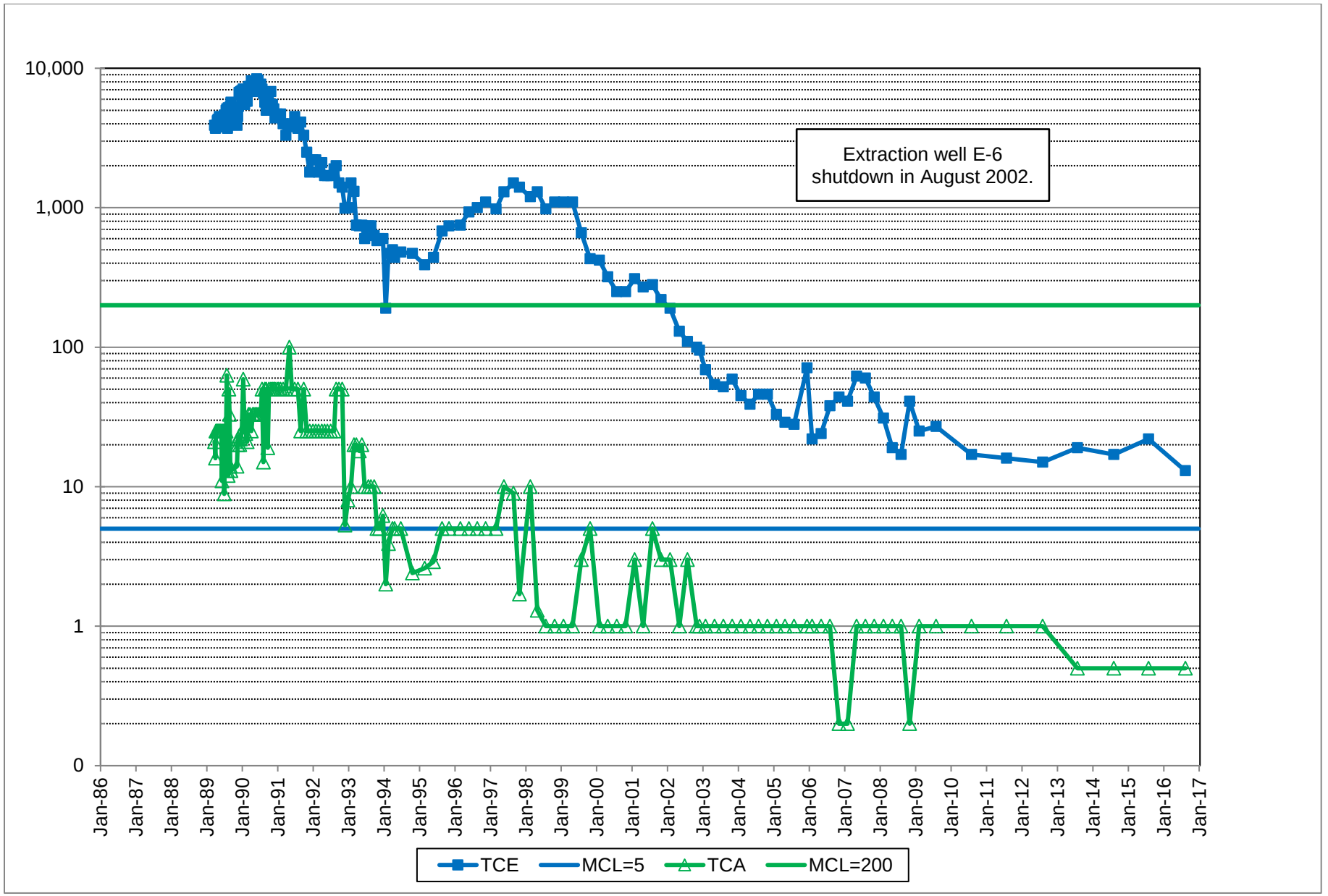


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

BOP-59(i) Time vs Concentration Through December 31, 2016

Figure
C-9

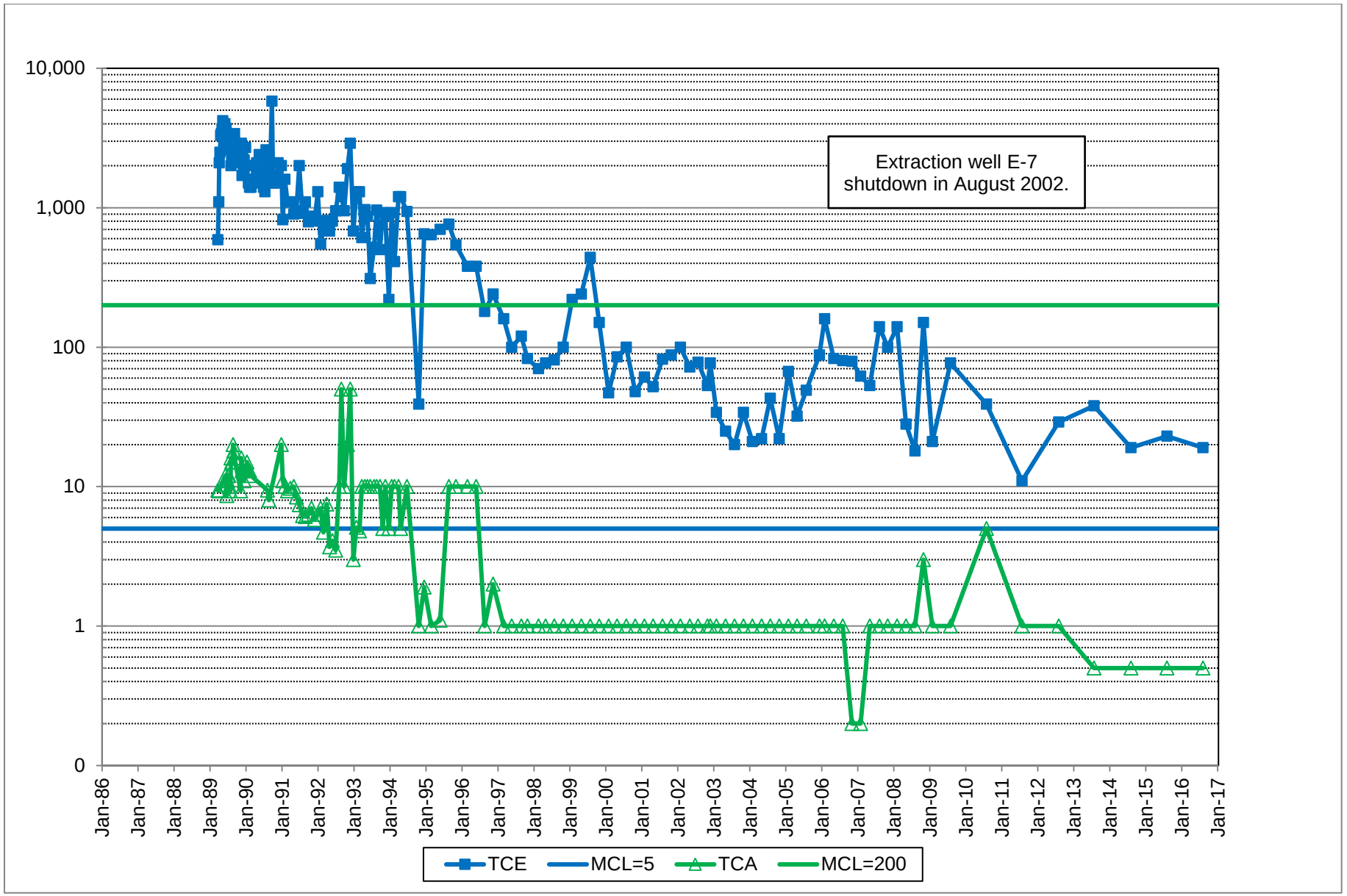


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

E-6 Time vs Concentration Through December 31, 2016

Figure
C-10

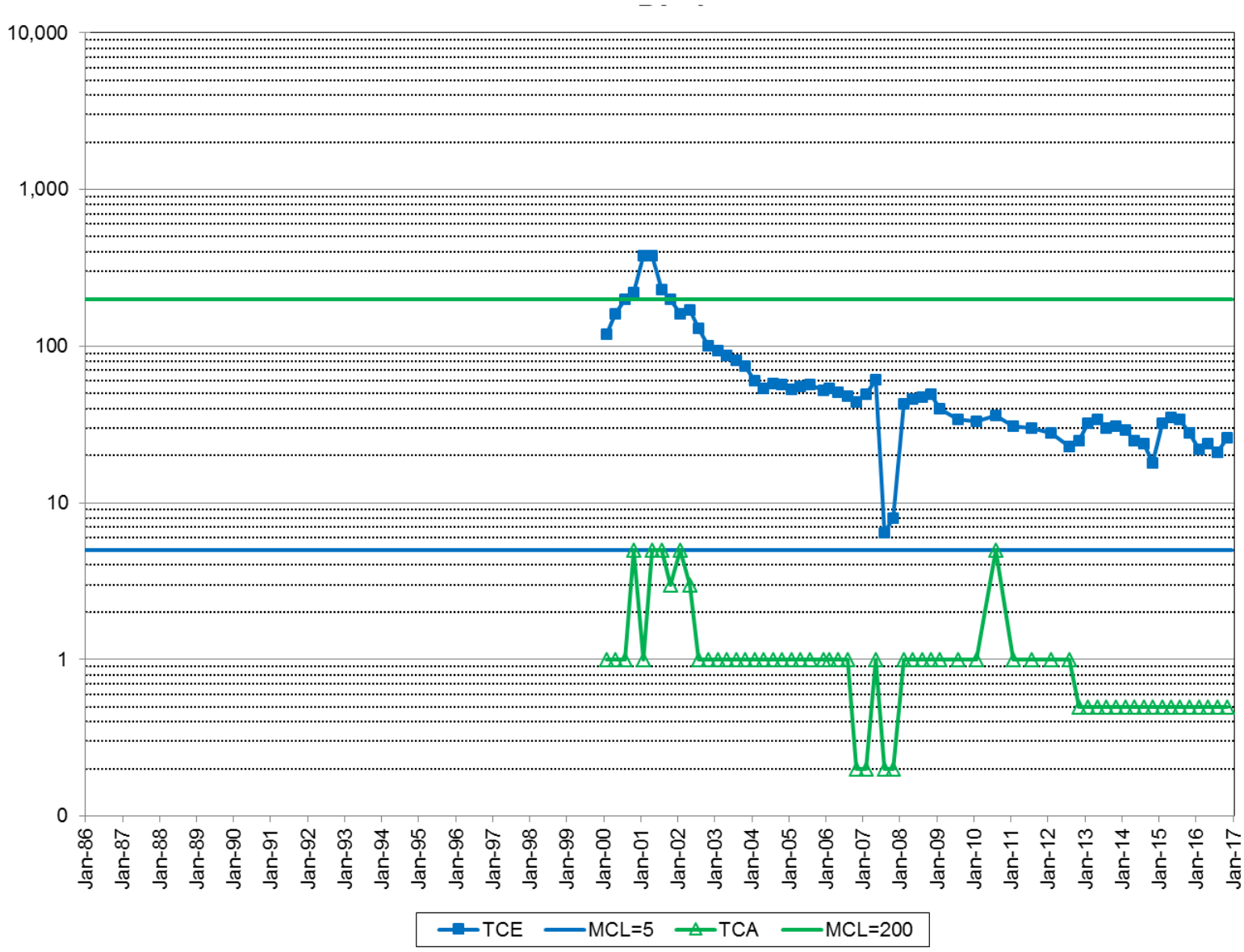


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

E-7 Time vs Concentration Through December 31, 2016

Figure
C-11



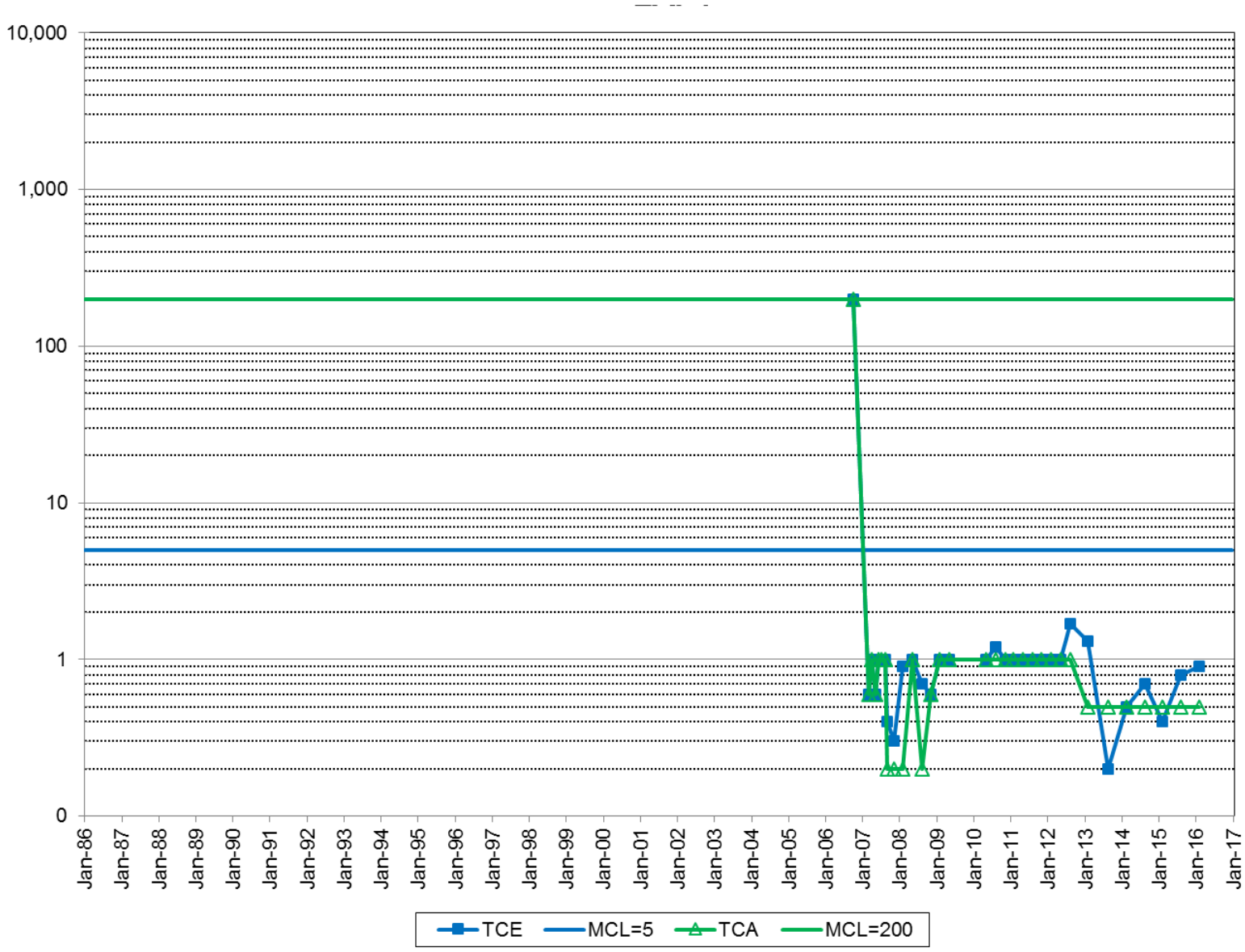
LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

DP-1 Time vs Concentration Through December 31, 2016

Figure
C-12

COOLANT RELEASE AREA

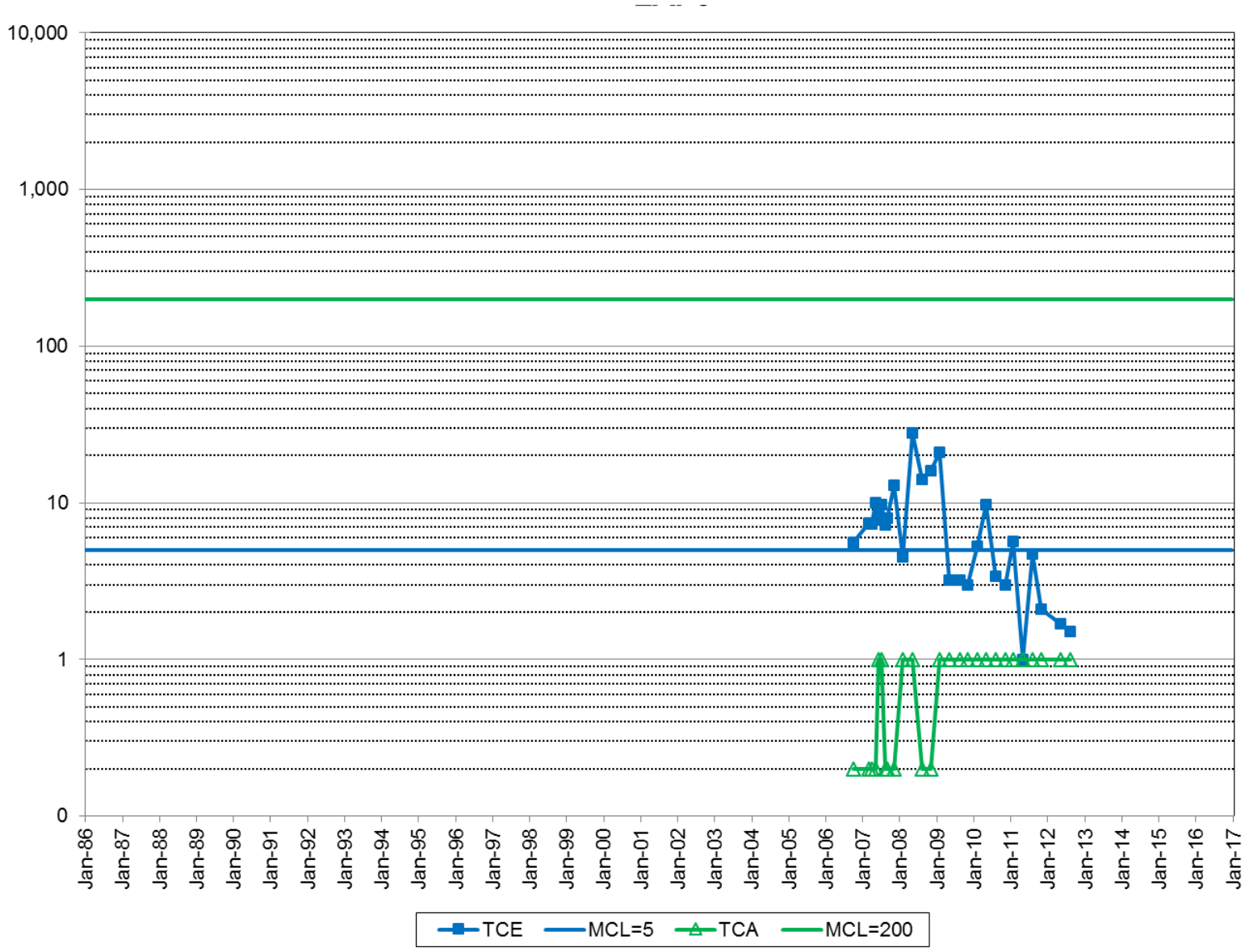


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

LAI-4 Time vs Concentration Through December 31, 2016

Figure
C-13

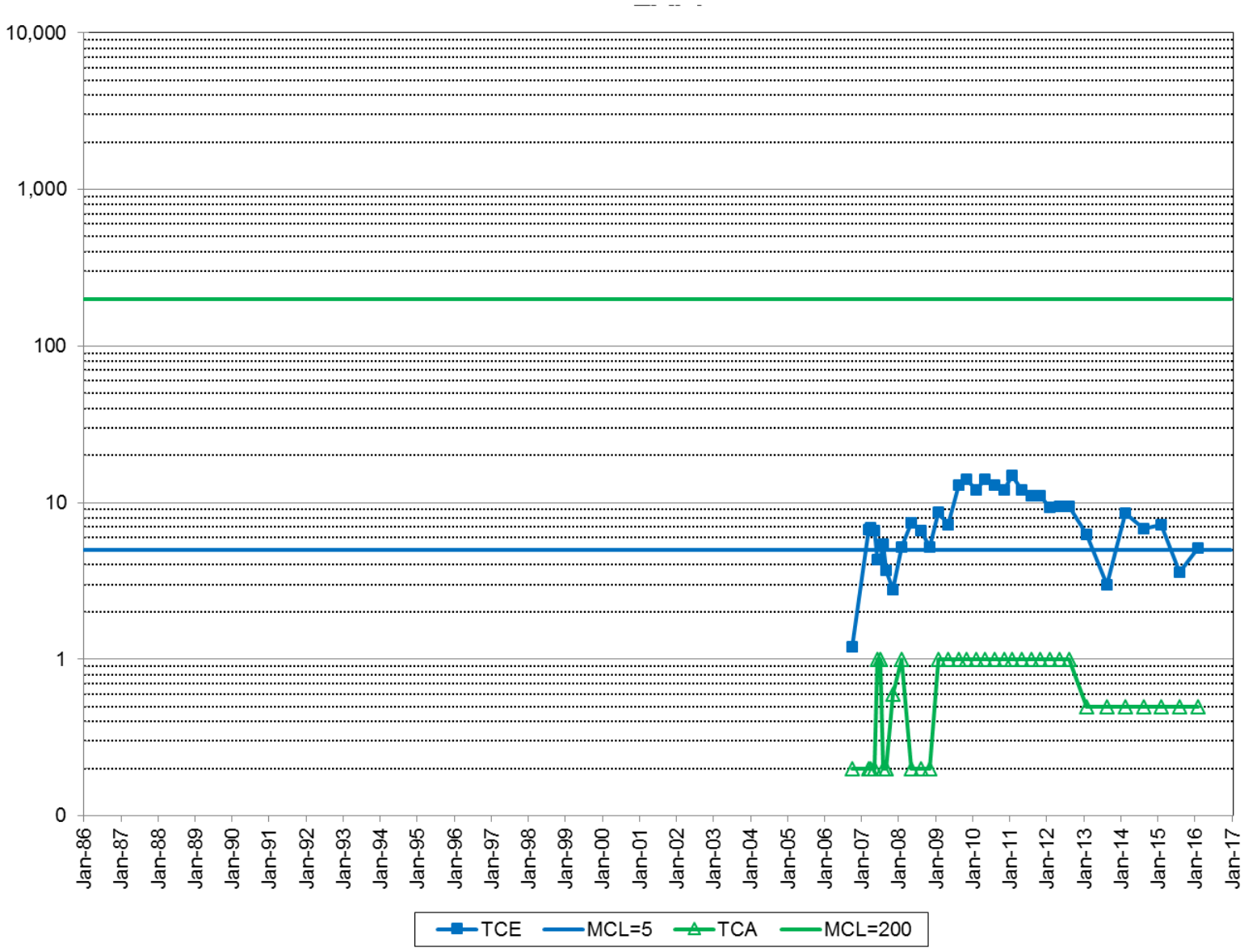


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

LAI-6 Time vs Concentration Through December 31, 2016

Figure
C-14

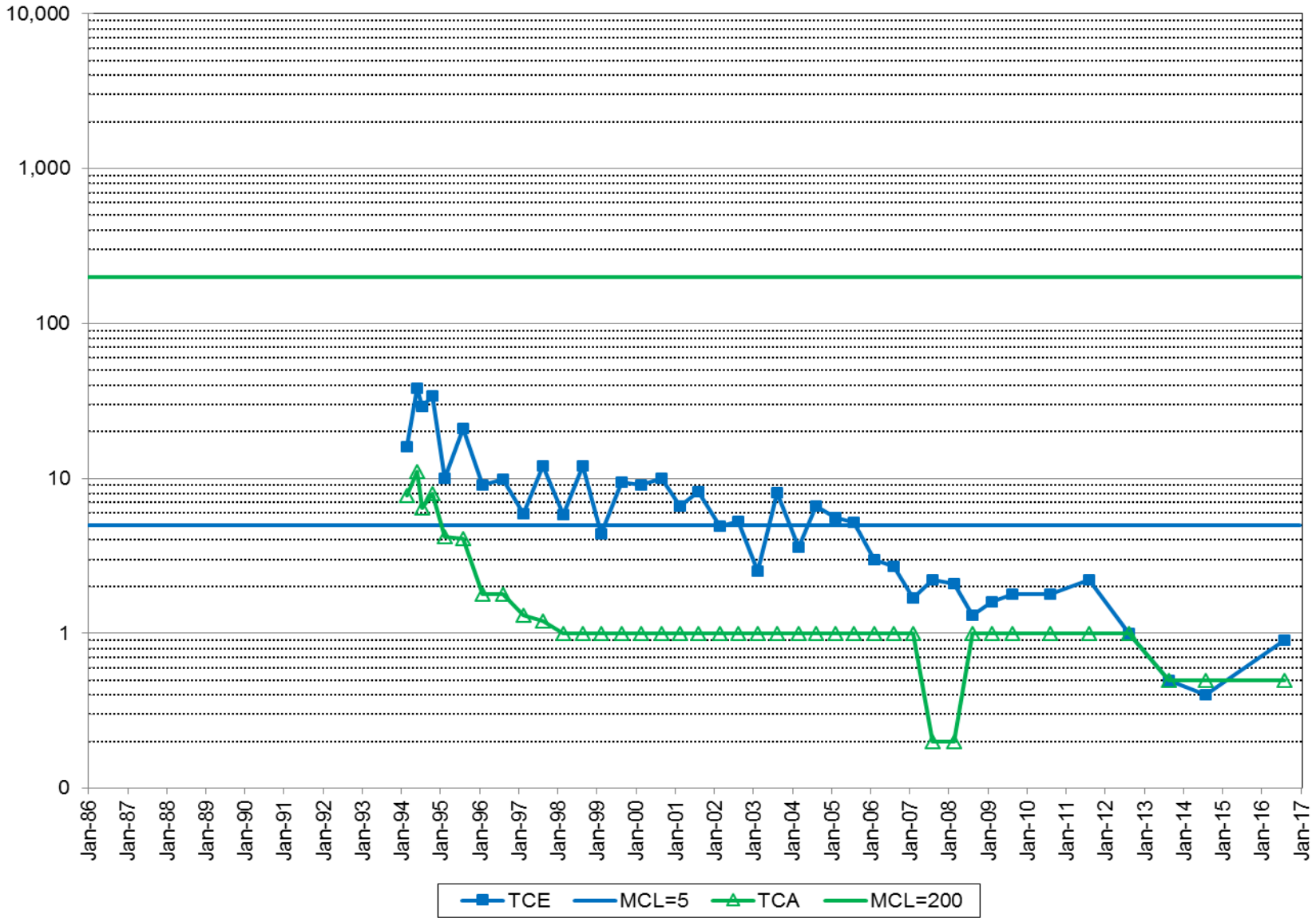


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

LAI-7 Time vs Concentration Through December 31, 2016

Figure
C-15

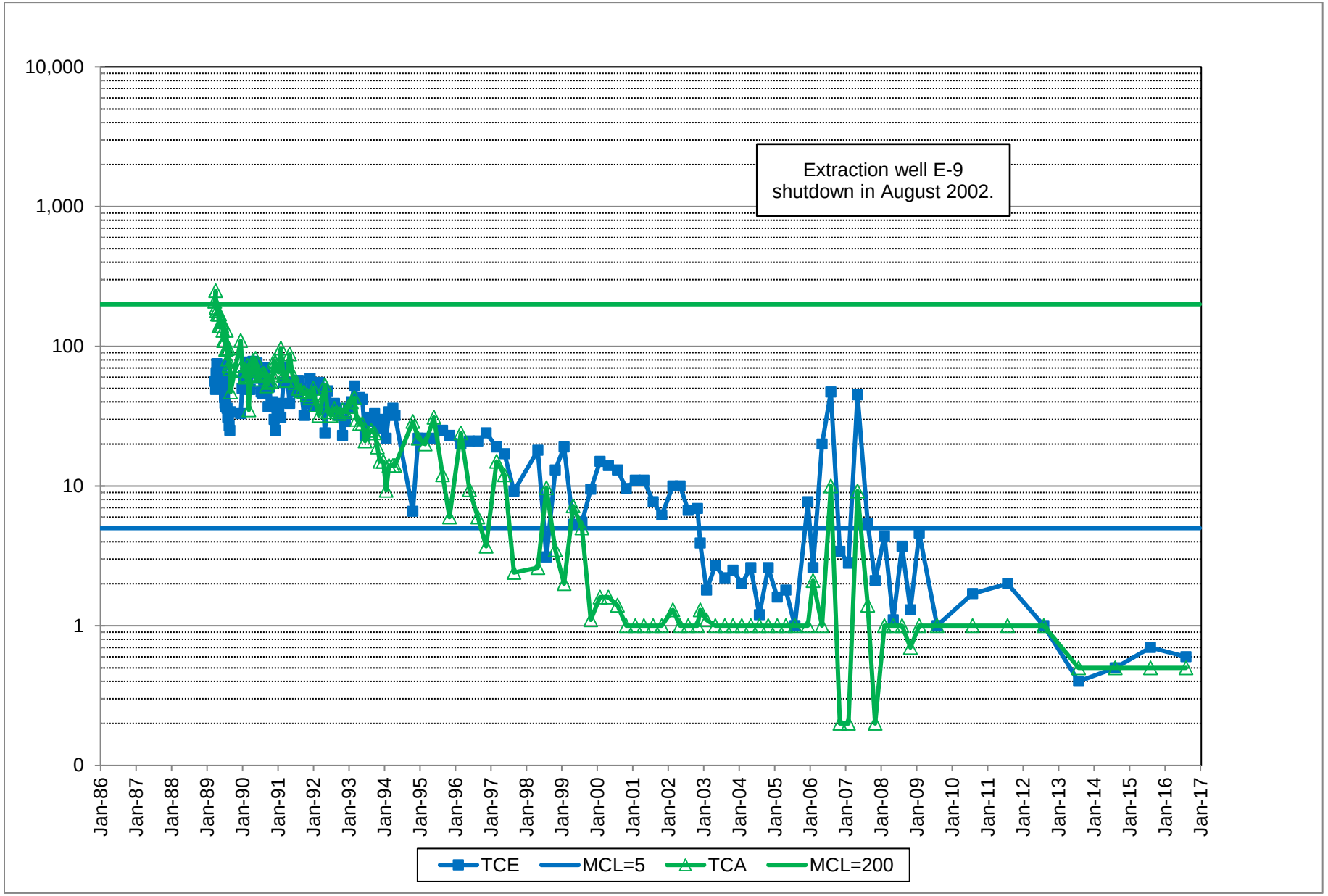


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

BOP-48(i) Time vs Concentration Through December 31, 2016

Figure
C-16

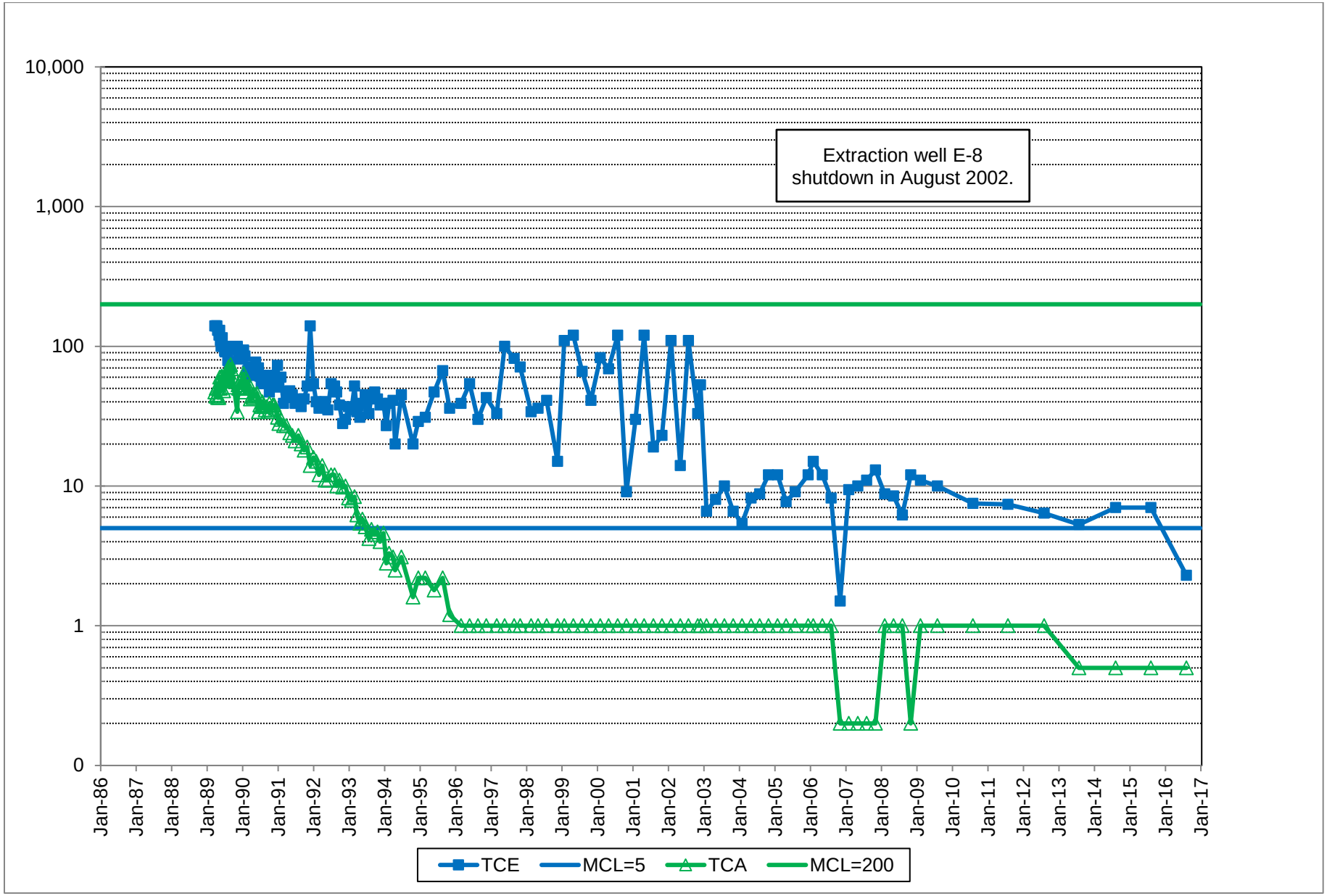


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

E-9 Time vs Concentration Through December 31, 2016

Figure
C-17

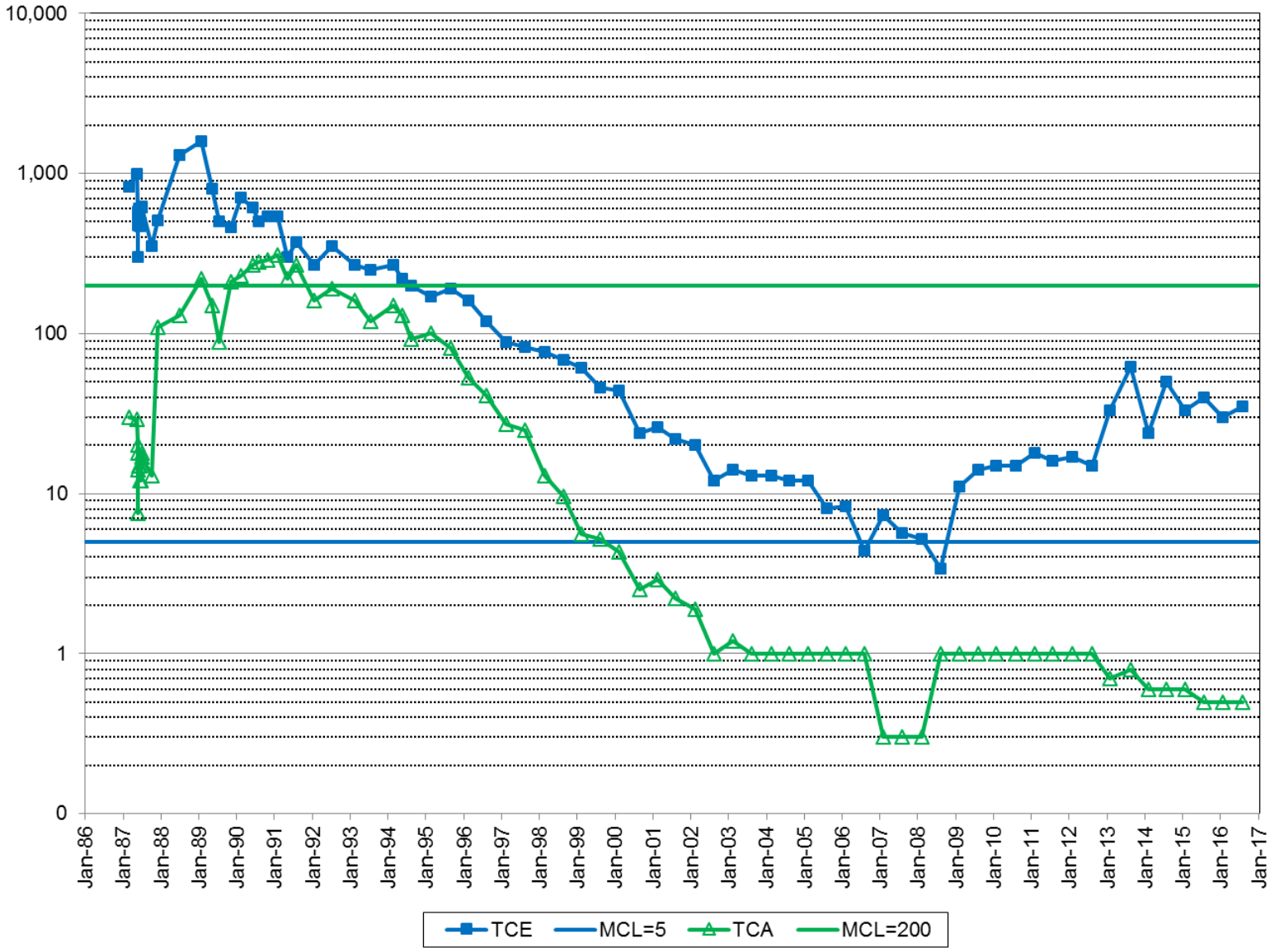


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

E-8 Time vs Concentration Through December 31, 2016

Figure
C-18



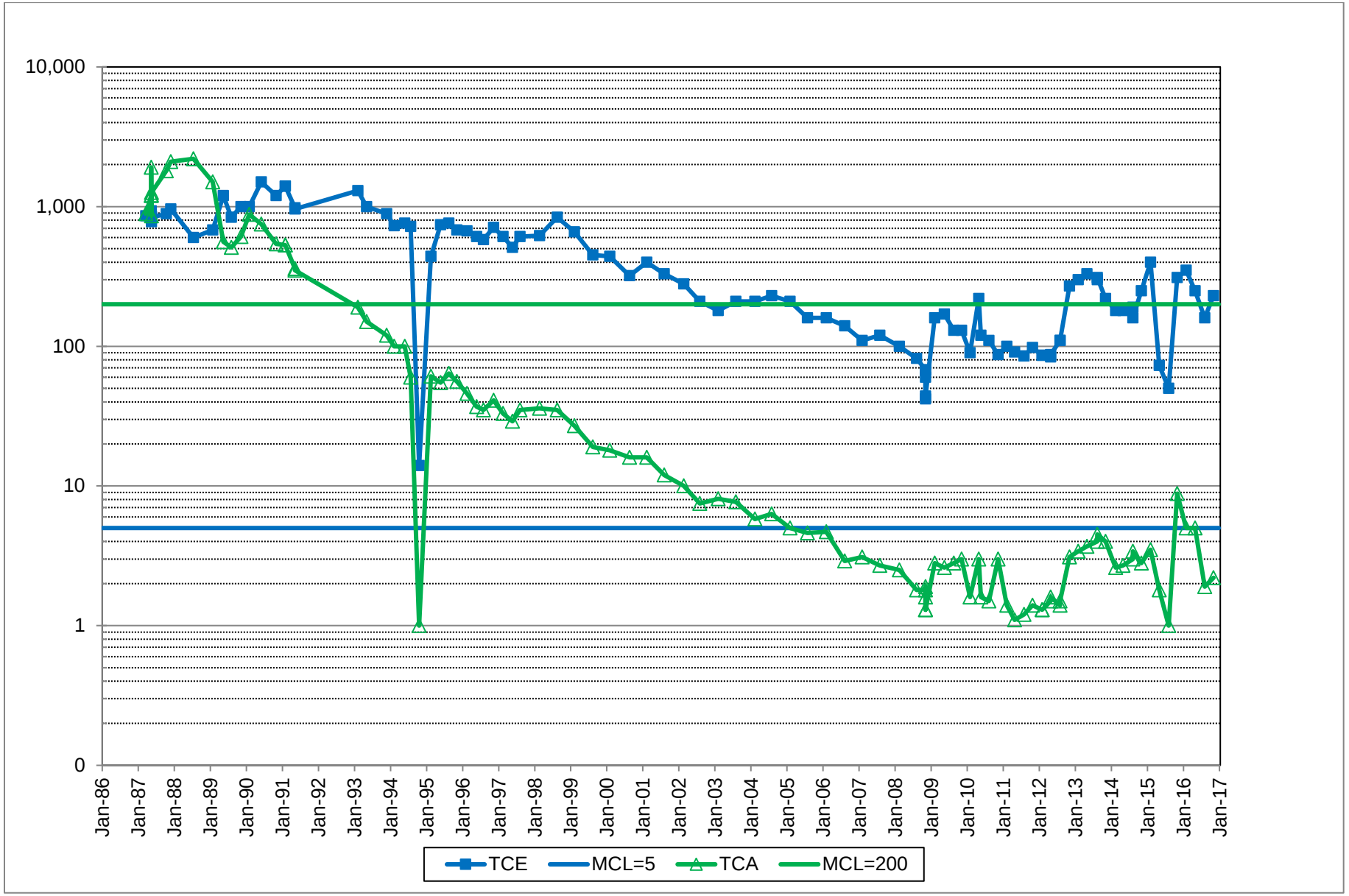
LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

BOP-9(i) Time vs Concentration Through December 31, 2016

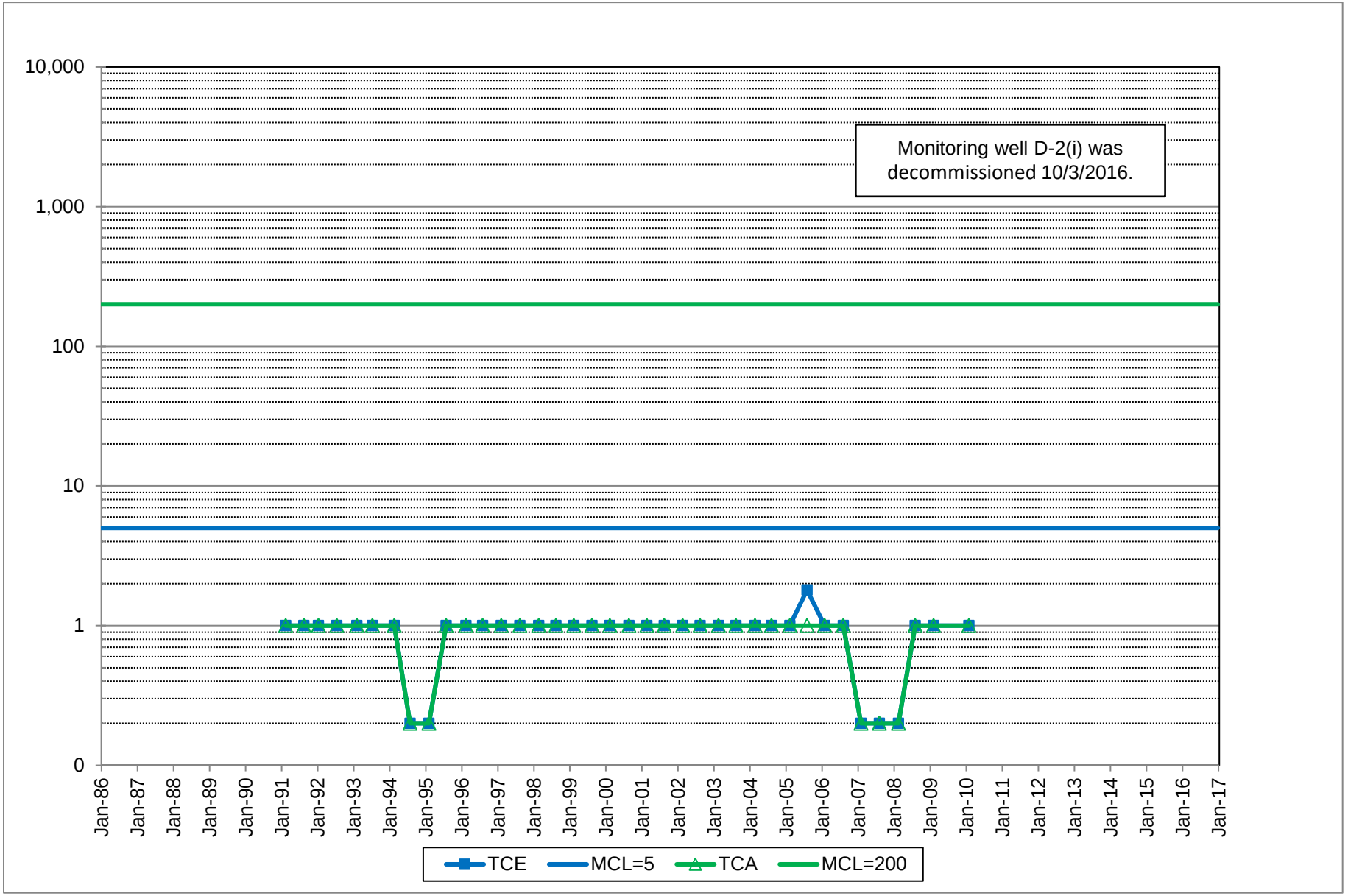
Figure
C-19

DOWNGRADIENT CORRECTIVE ACTION AREA



LANDAU ASSOCIATES

Boeing Portland Gresham, Oregon	**BOP-7(i) Time vs Concentration Through December 31, 2016**	Figure C-20

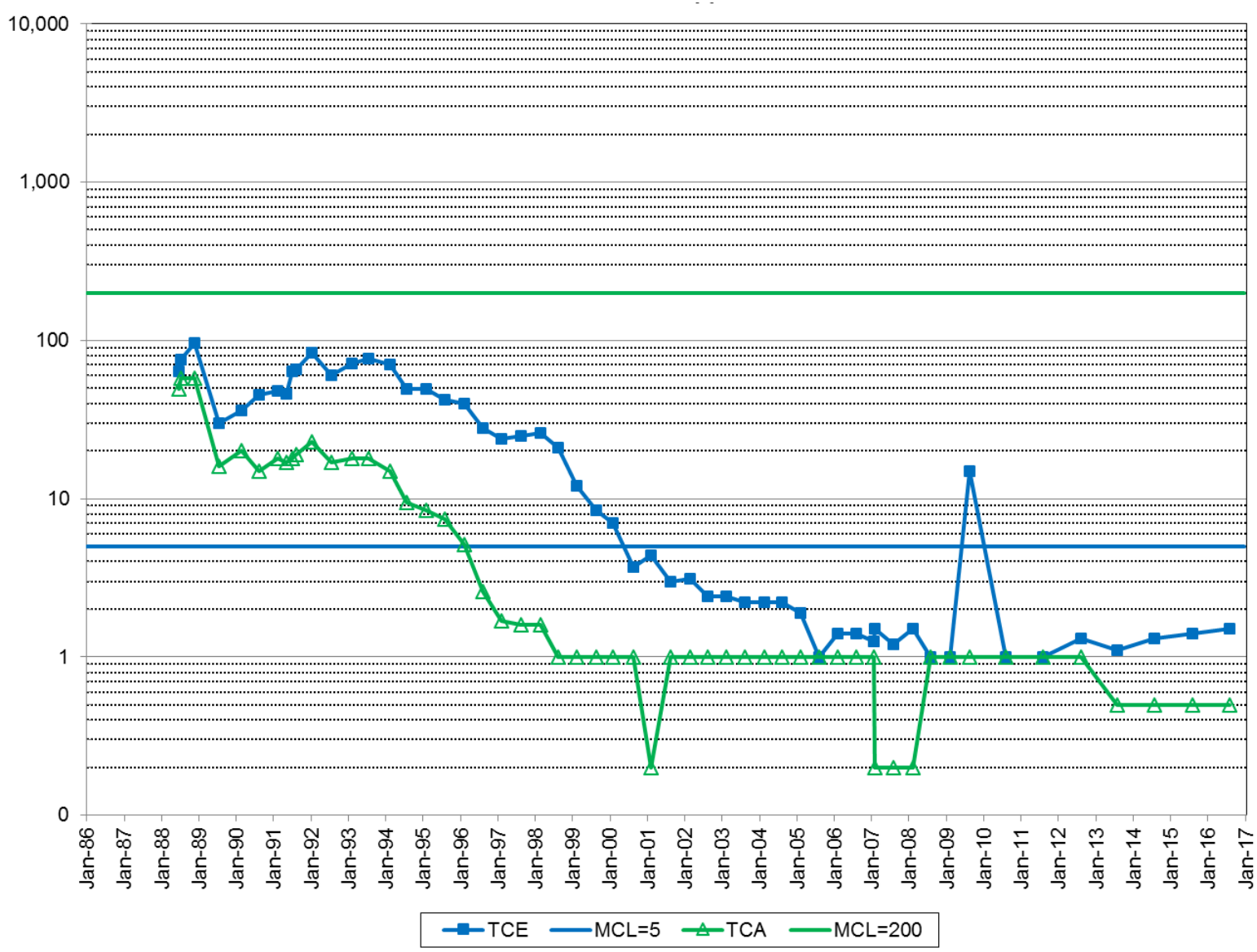


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

D-2(i) Time vs Concentration Through December 31, 2016

Figure
C-21

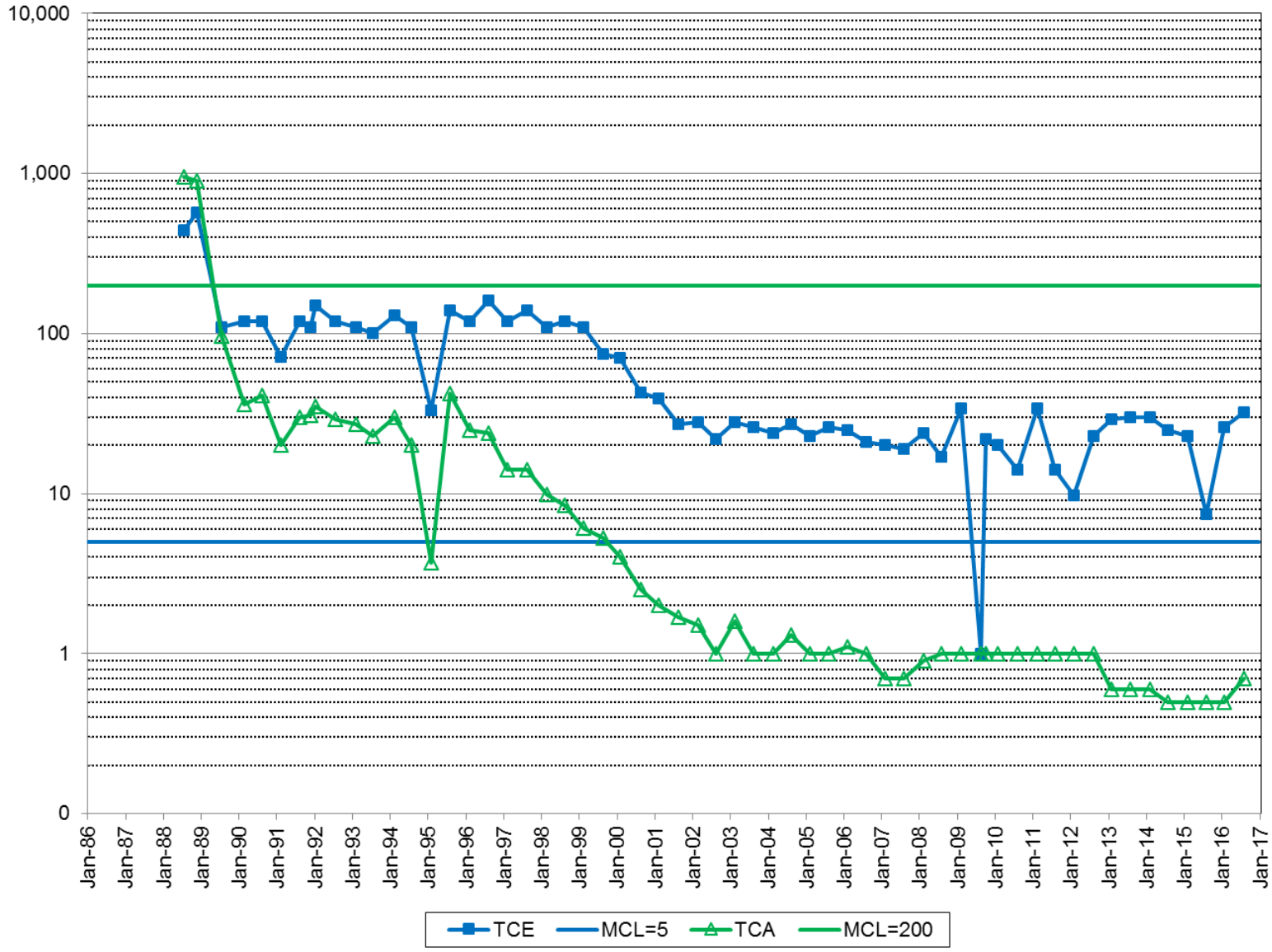


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

D-7(i) Time vs Concentration Through December 31, 2016

Figure
C-22

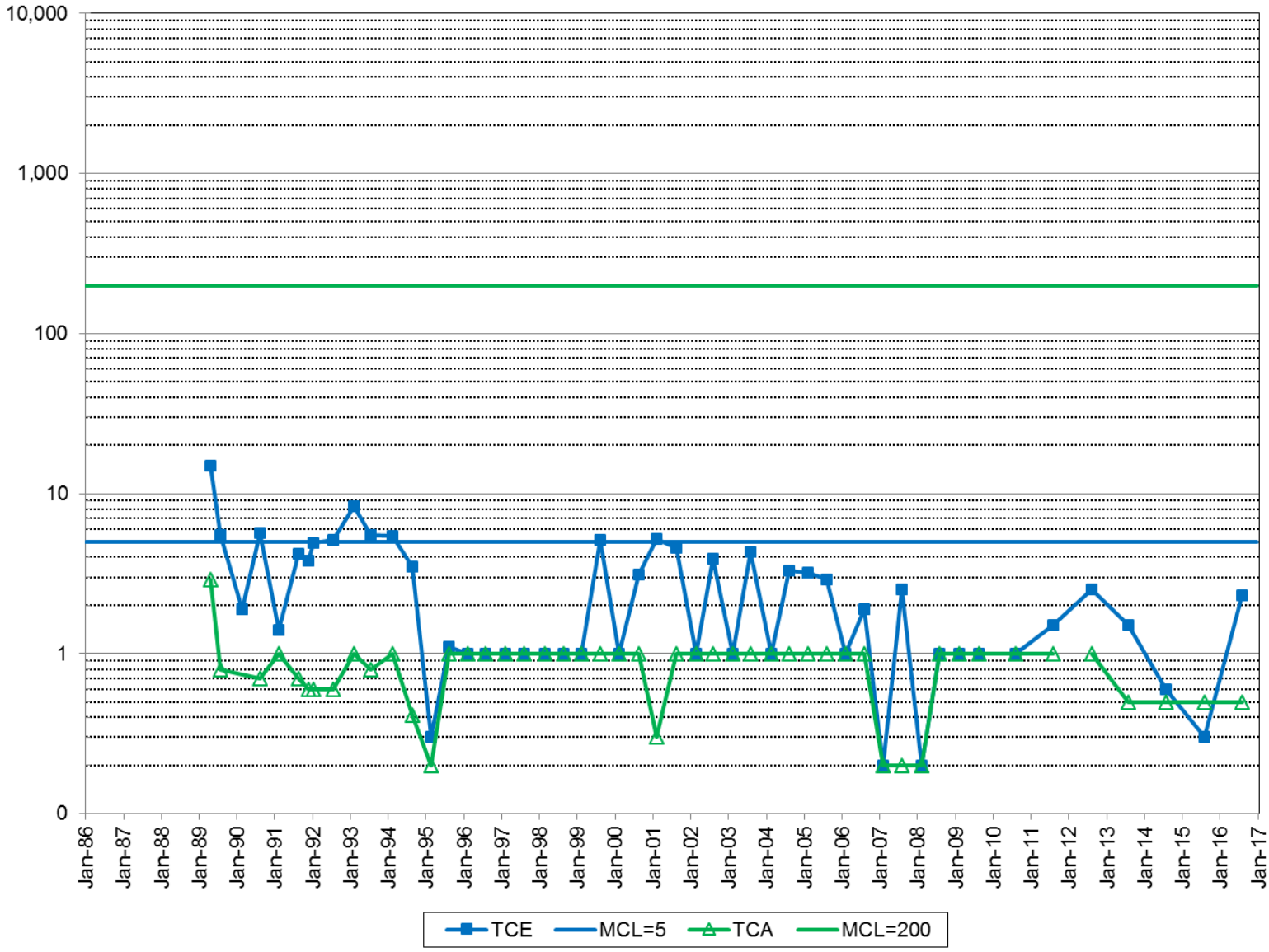


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

D-8(i) Time vs Concentration Through December 31, 2016

Figure
C-23

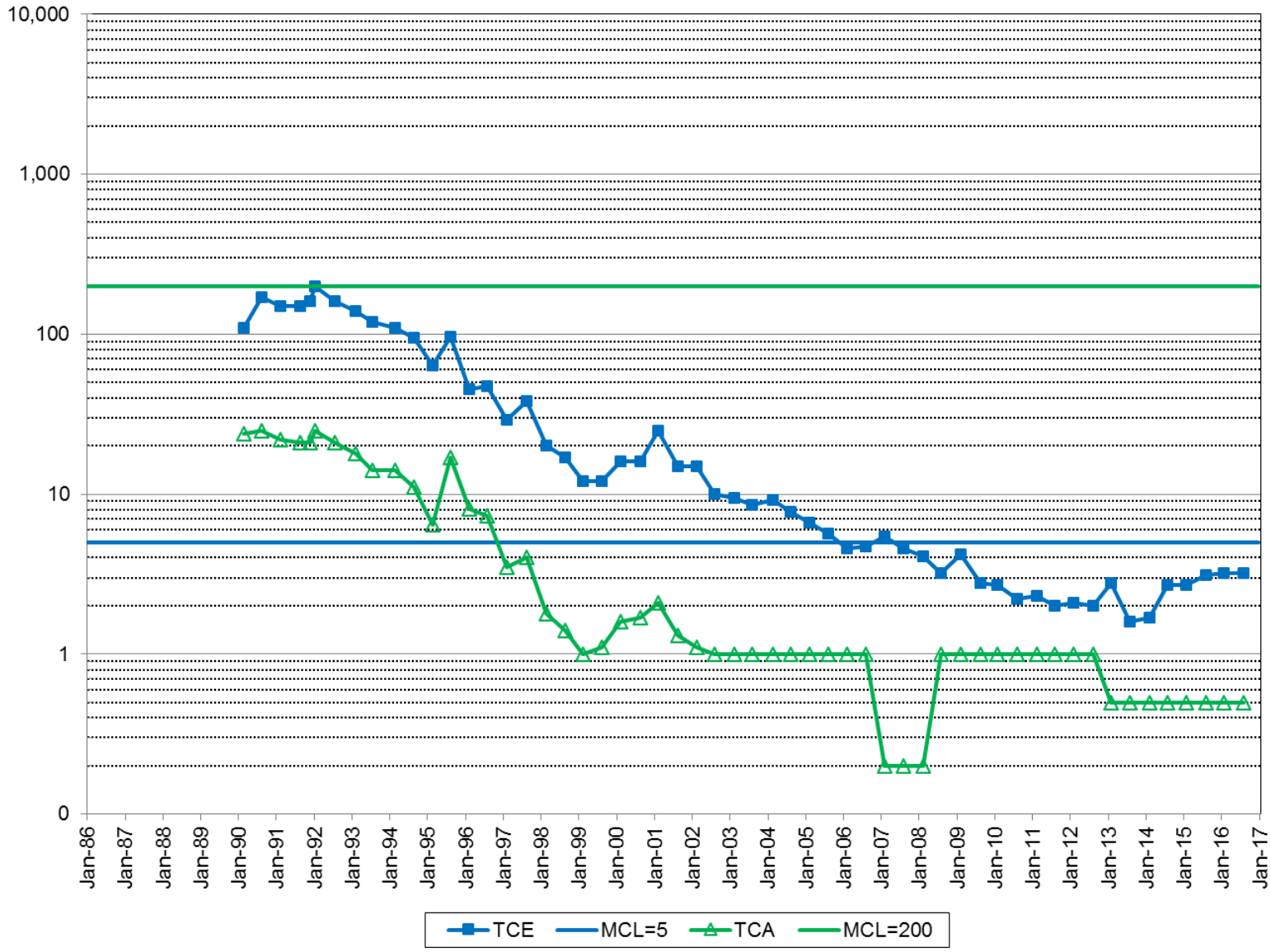


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

D-11(i) Time vs Concentration Through December 31, 2016

Figure
C-24

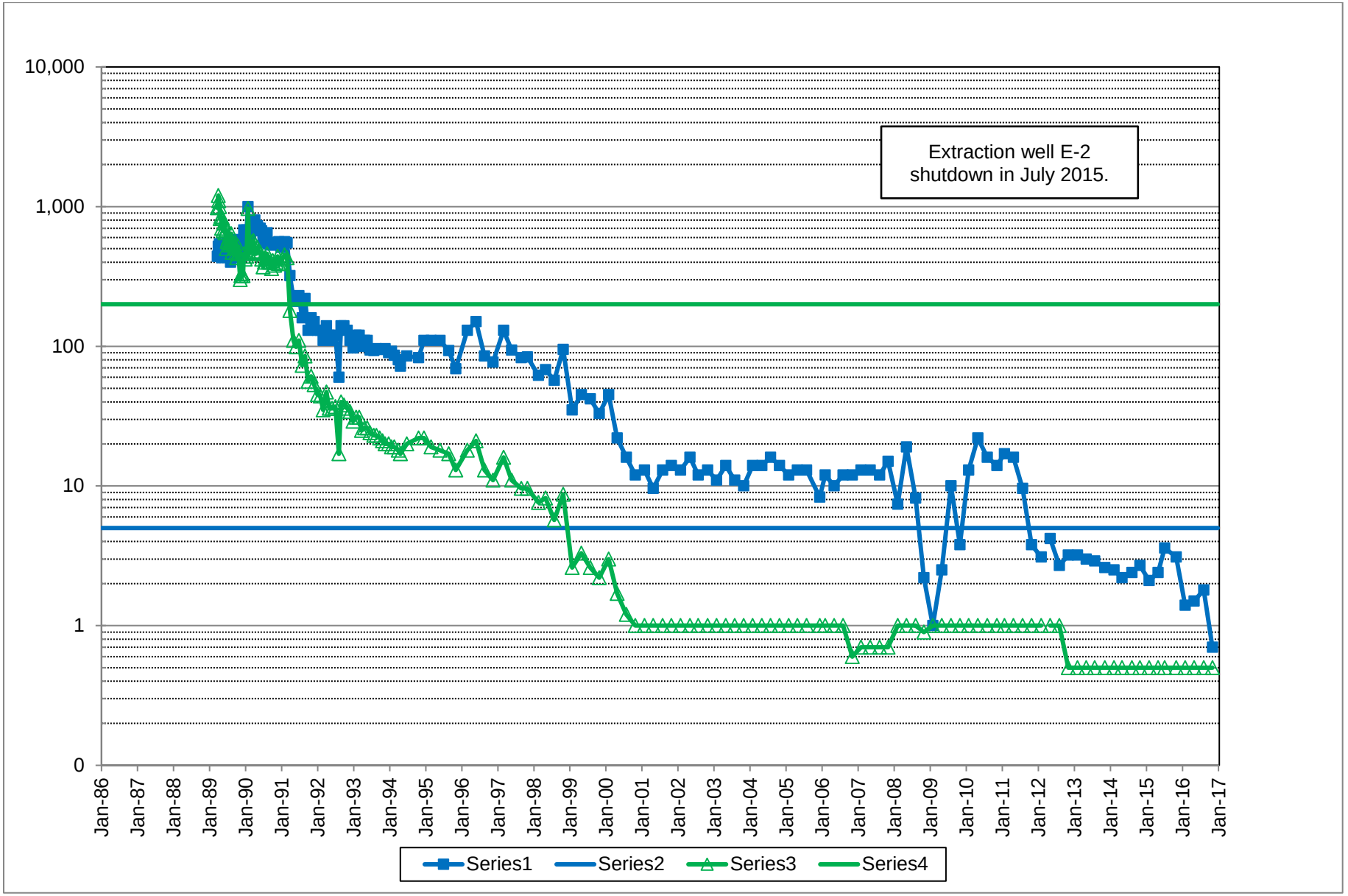


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

D-12(i) Time vs Concentration Through December 31, 2016

Figure
C-25

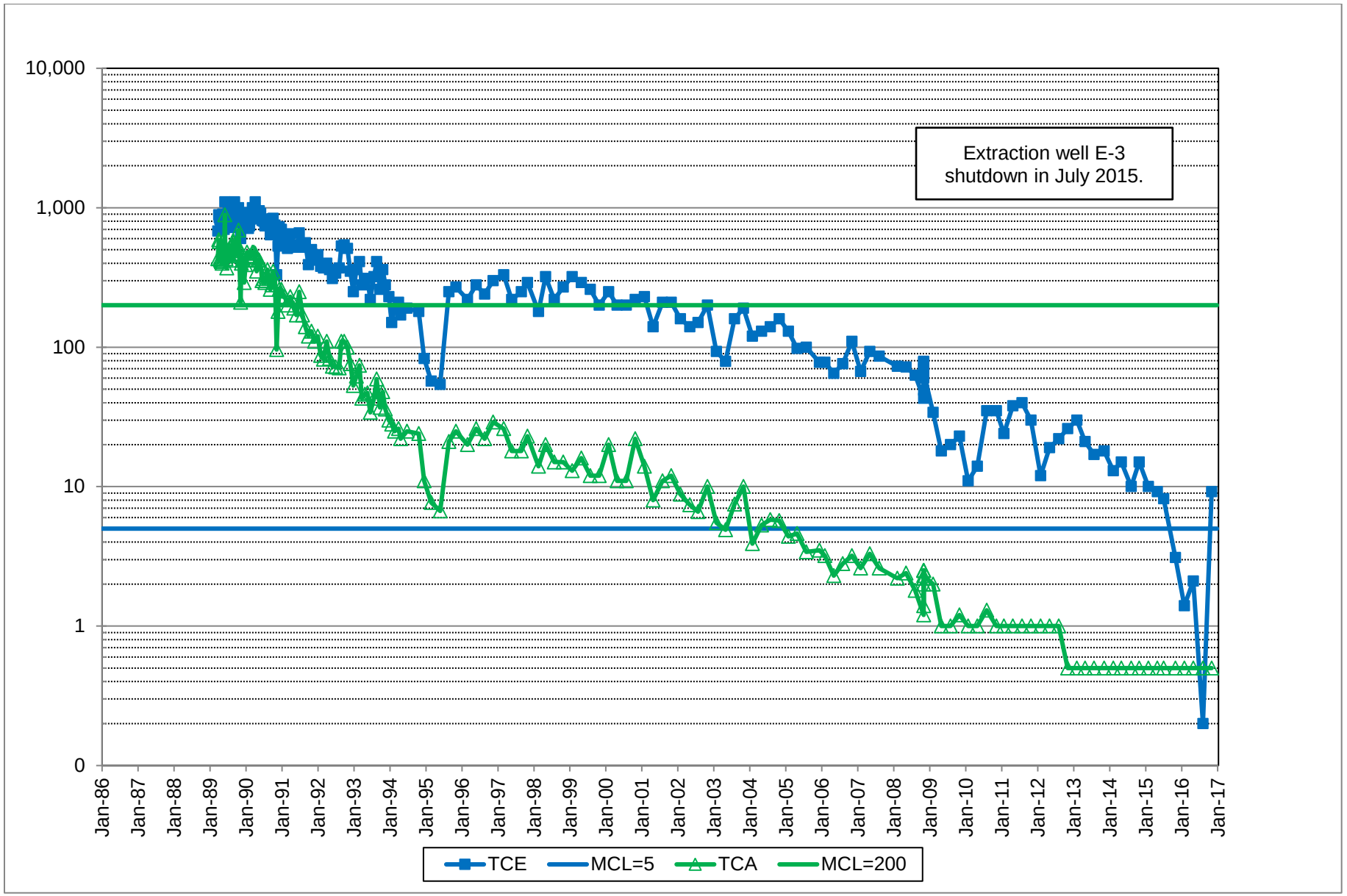


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Boeing Portland
Gresham, Oregon

E-2 Time vs Concentration Through December 31, 2016

Figure
C-26

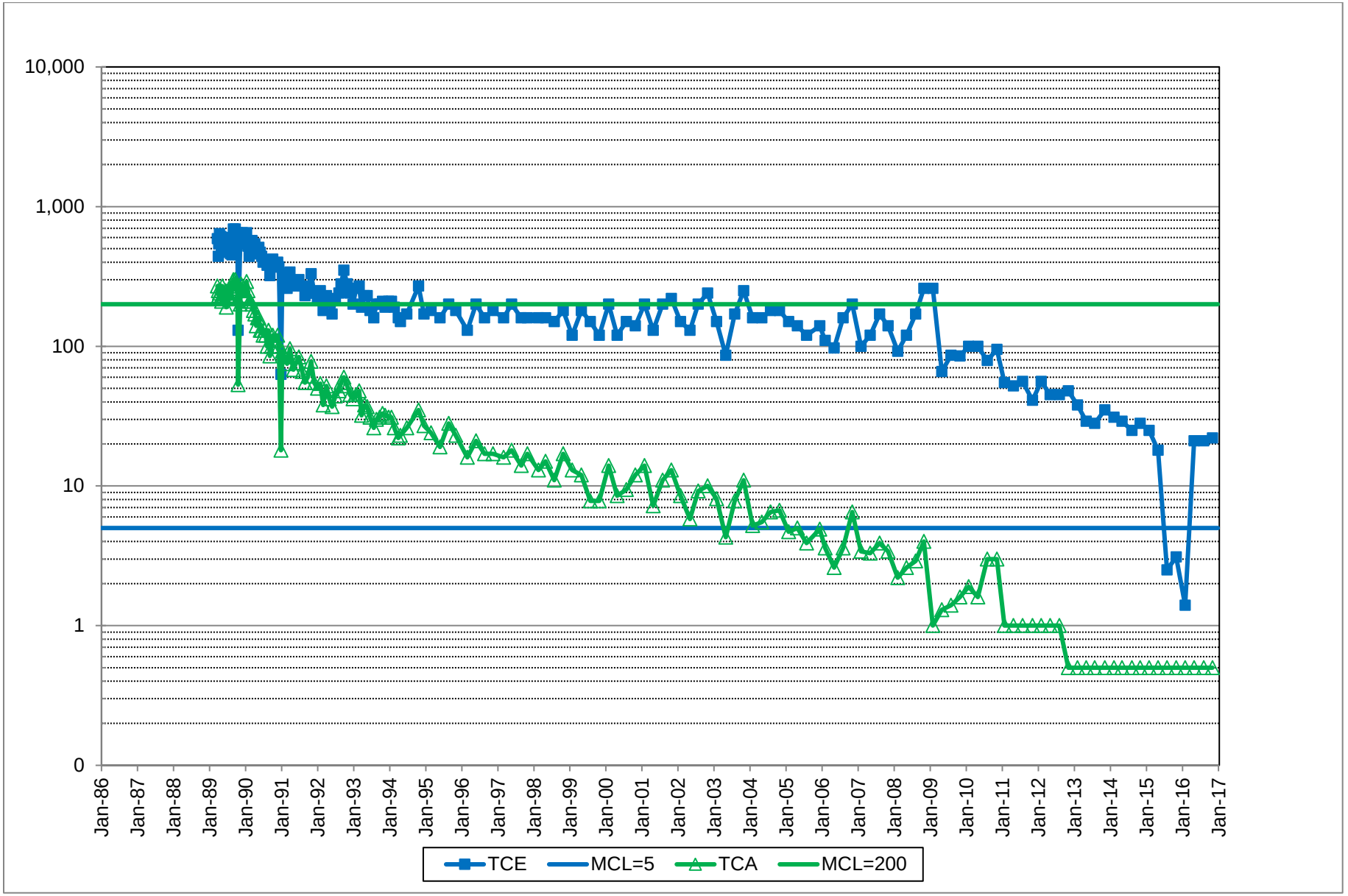


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Boeing Portland
Gresham, Oregon

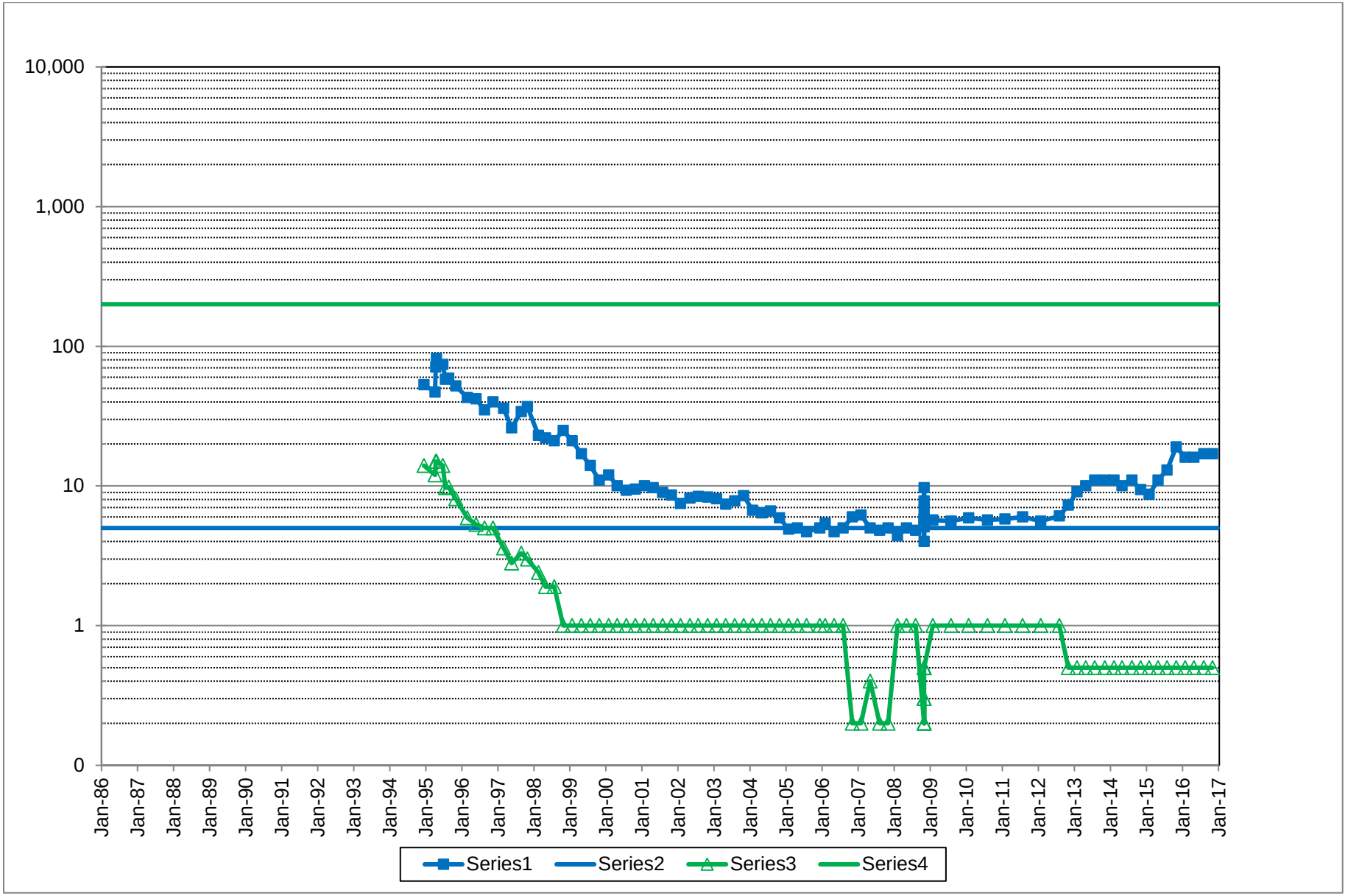
E-3 Time vs Concentration Through December 31, 2016

Figure
C-27



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Boeing Portland Gresham, Oregon	**E-4 Time vs Concentration Through December 31, 2016**	Figure C-28

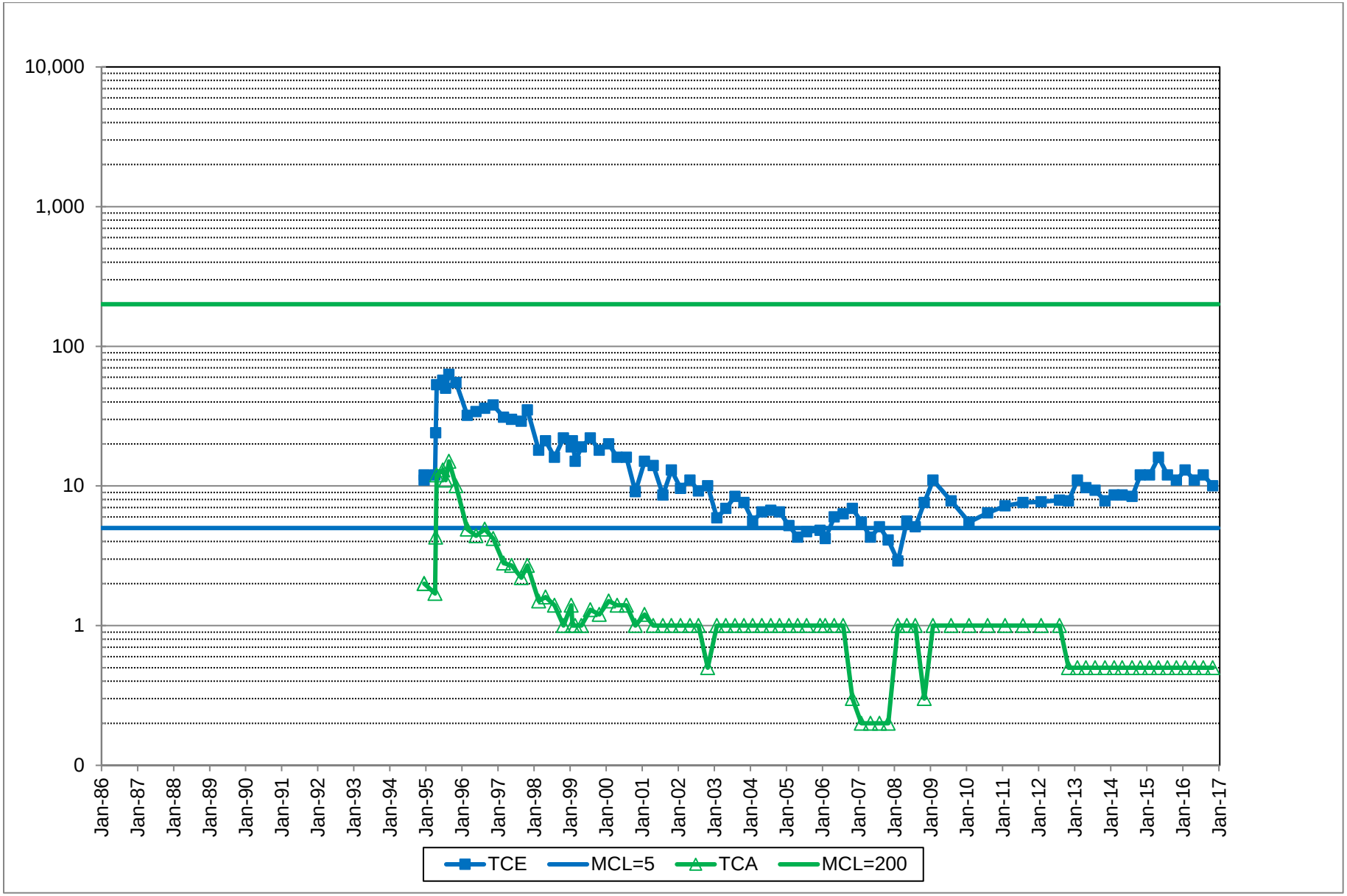


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Boeing Portland
Gresham, Oregon

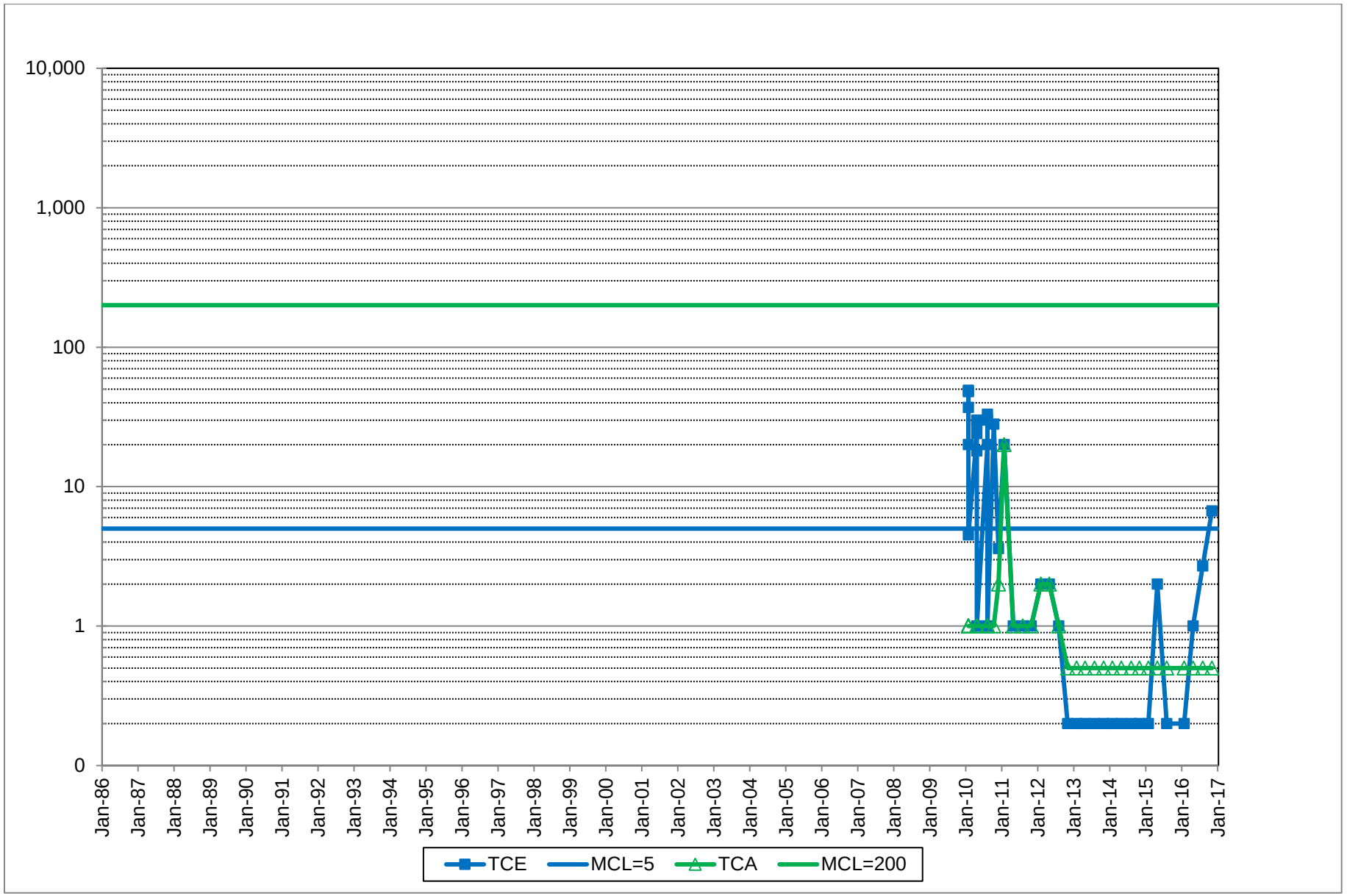
E-12 Time vs Concentration Through December 31, 2016

Figure
C-29



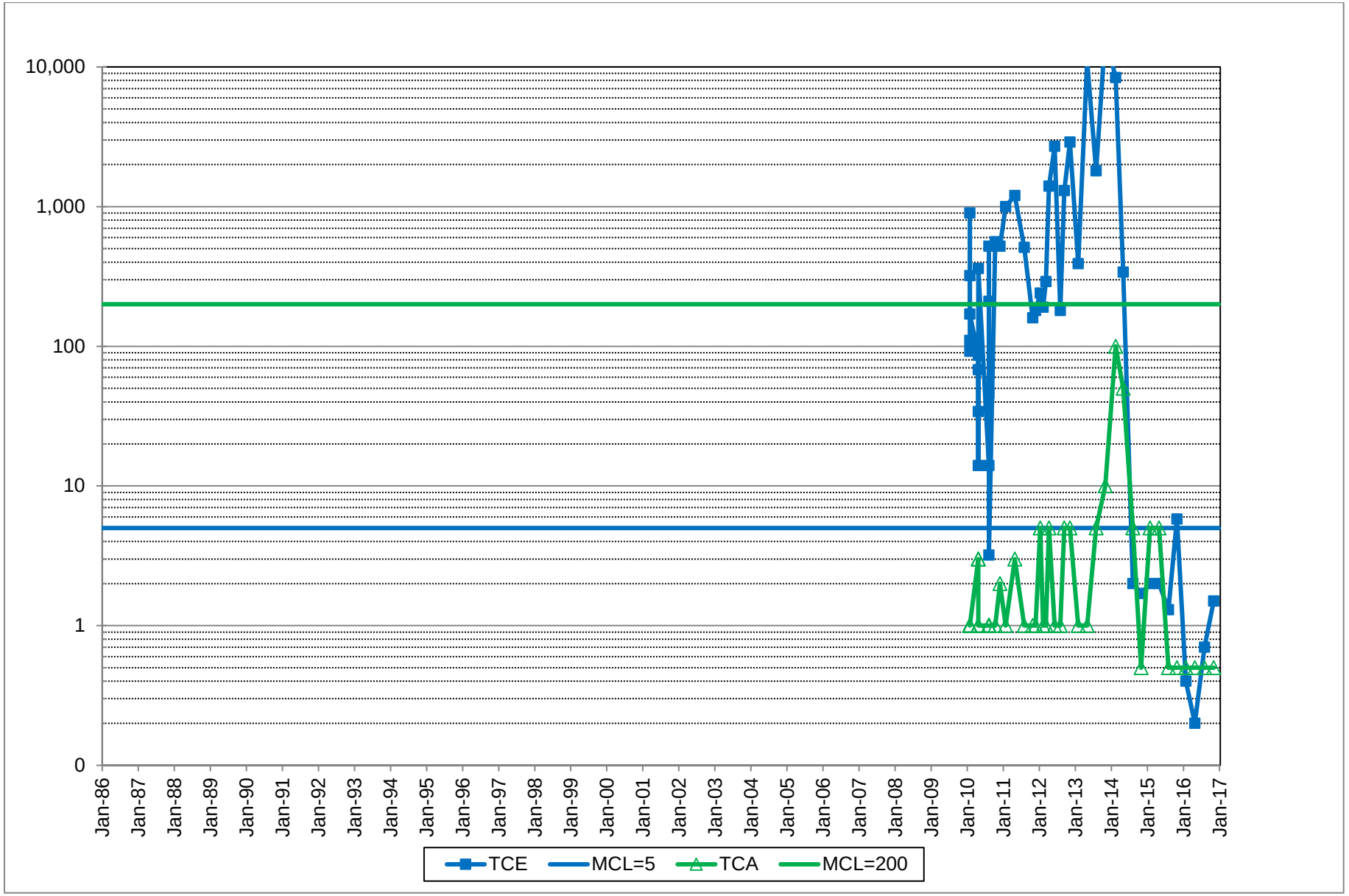
LANDAU ASSOCIATES

Boeing Portland Gresham, Oregon	**E-13 Time vs Concentration Through December 31, 2016**	Figure C-30



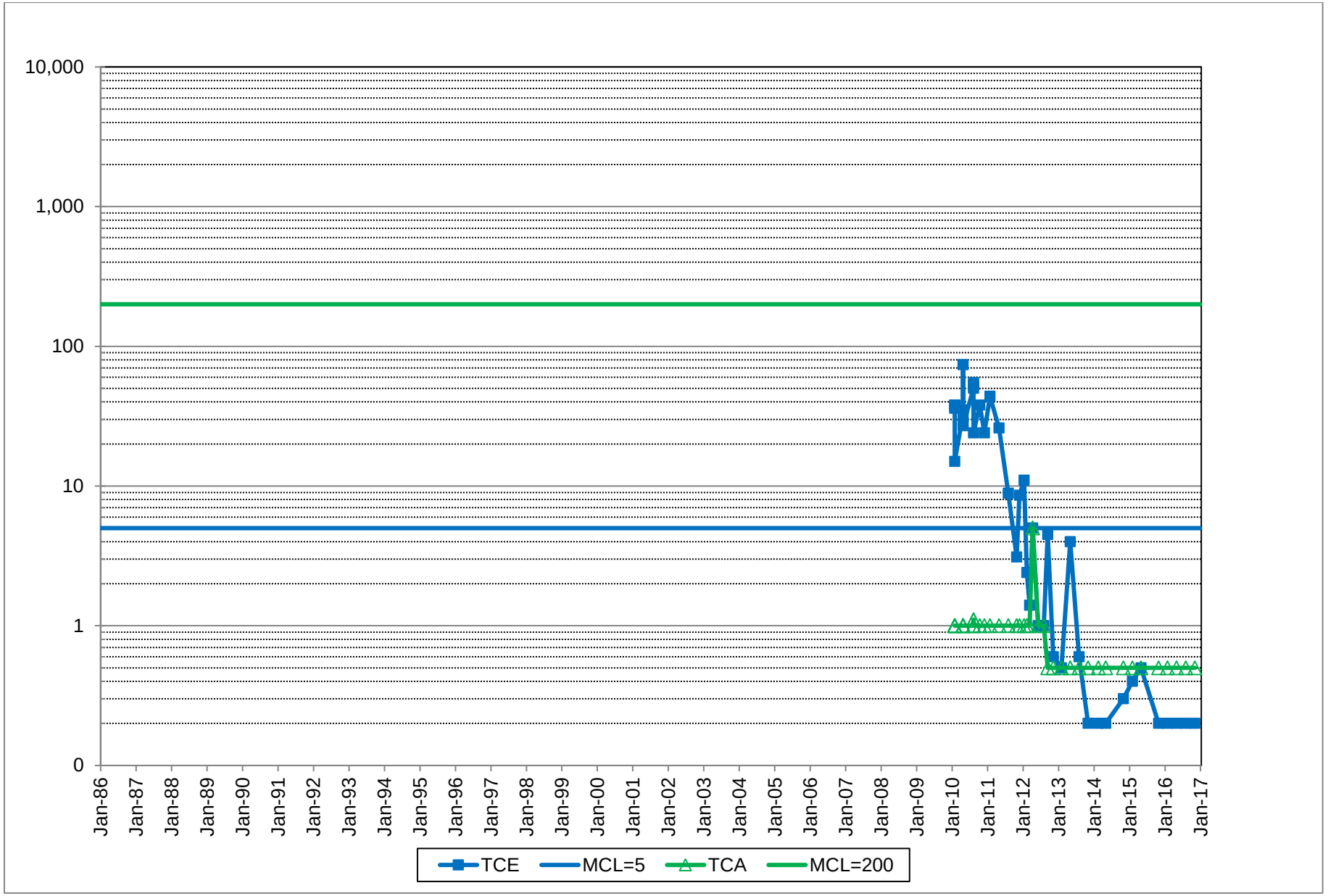
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Boeing Portland Gresham, Oregon	**BOP-72(i) Time vs Concentration Through December 31, 2016**	Figure C-31



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Boeing Portland Gresham, Oregon	**BOP-73(i) Time vs Concentration Through December 31, 2016**	Figure C-32

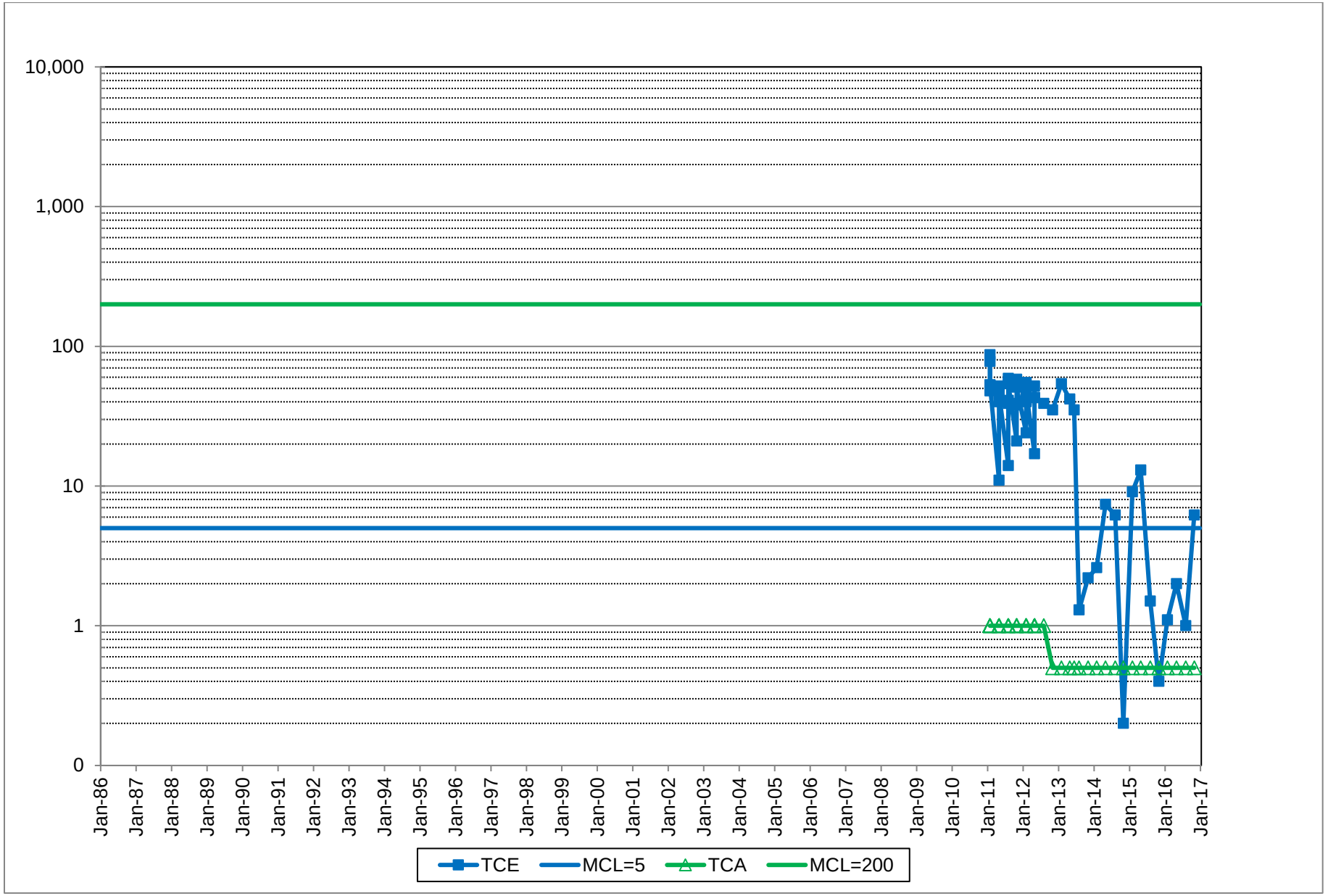


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Boeing Portland
Gresham, Oregon

BOP-74(i) Time vs Concentration Through December 31, 2016

Figure
C-33

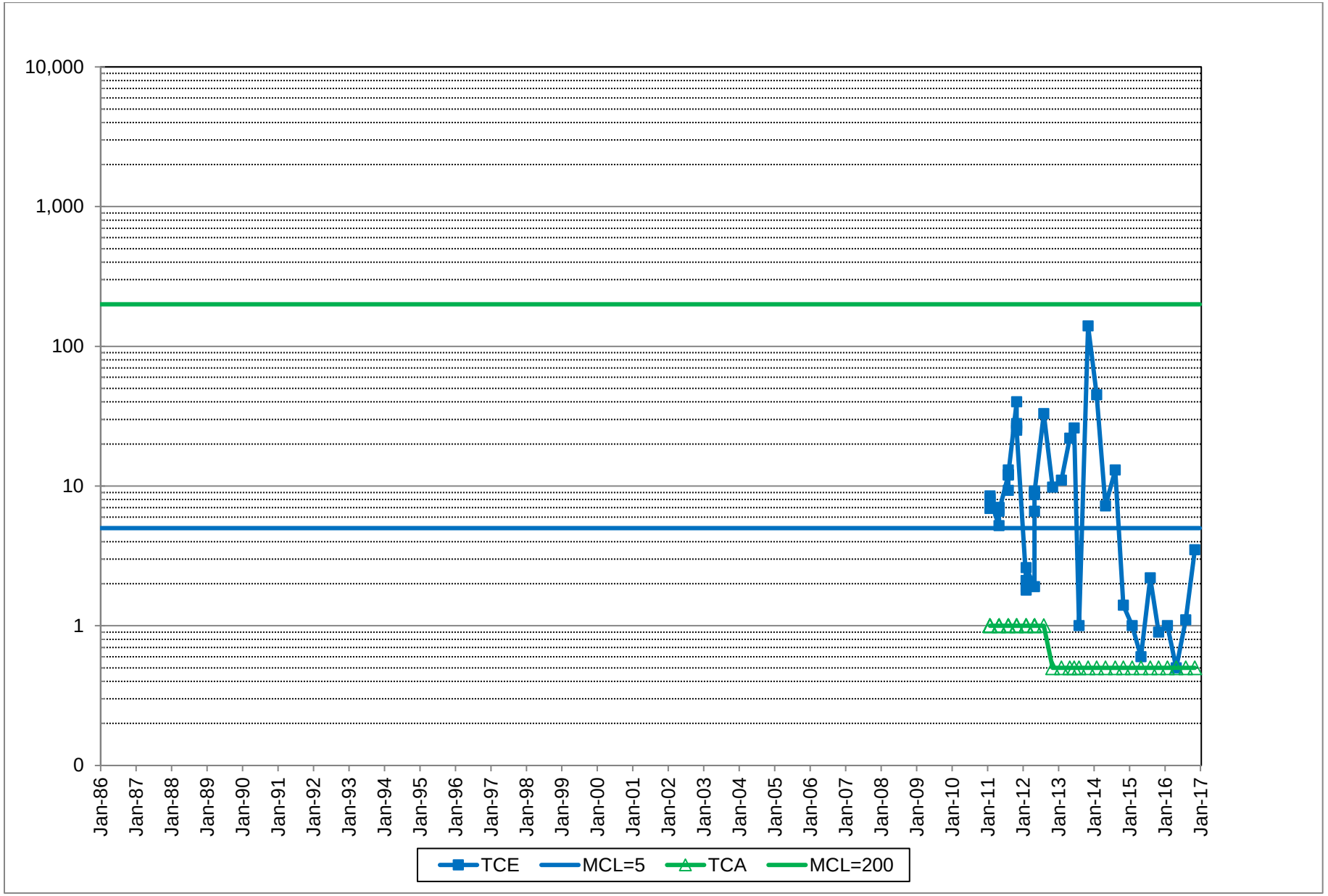


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Boeing Portland
Gresham, Oregon

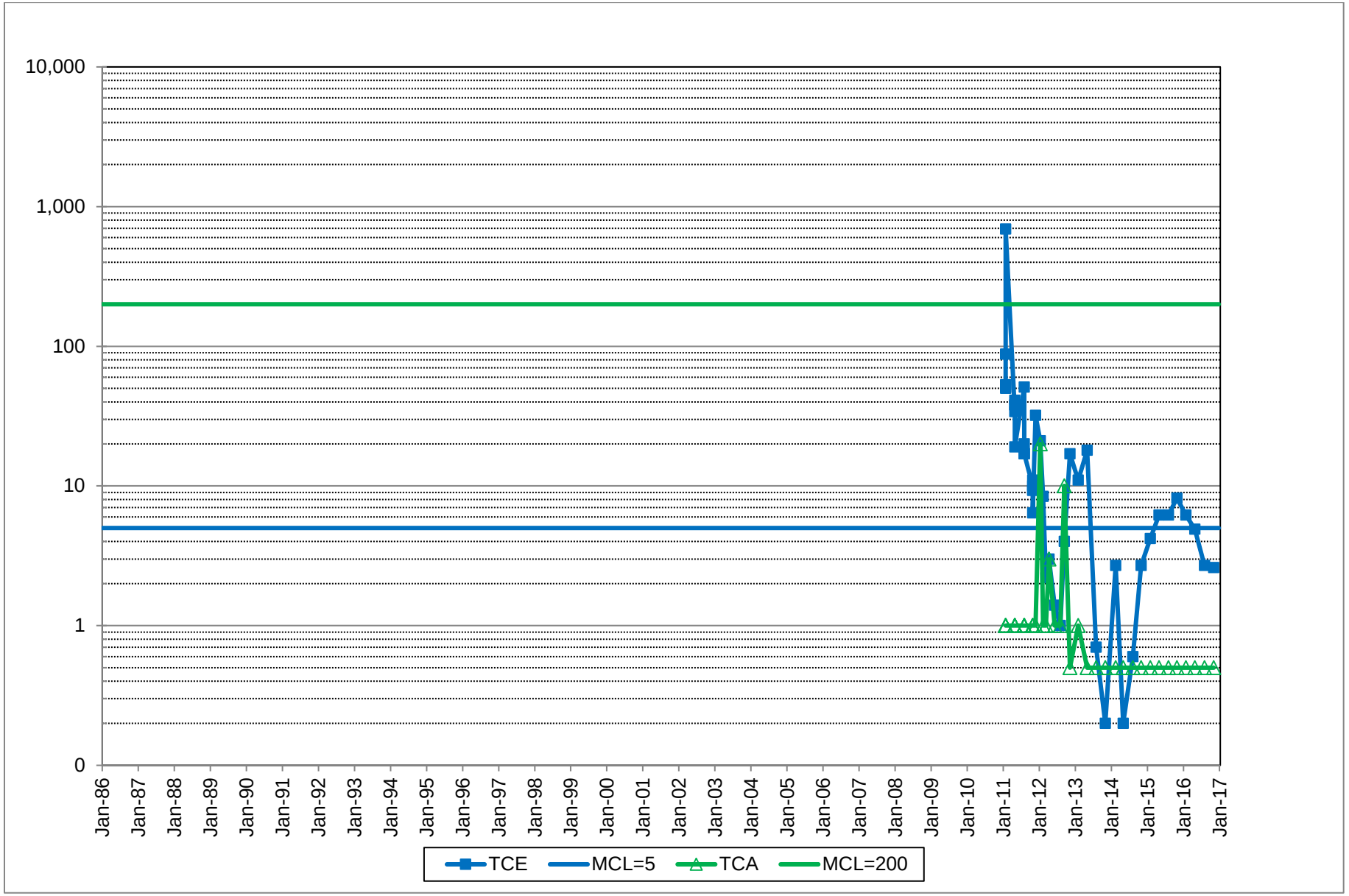
BOP-75(i) Time vs Concentration Through December 31, 2016

Figure
C-34



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Boeing Portland Gresham, Oregon	**BOP-76(i) Time vs Concentration Through December 31, 2016**	Figure C-35

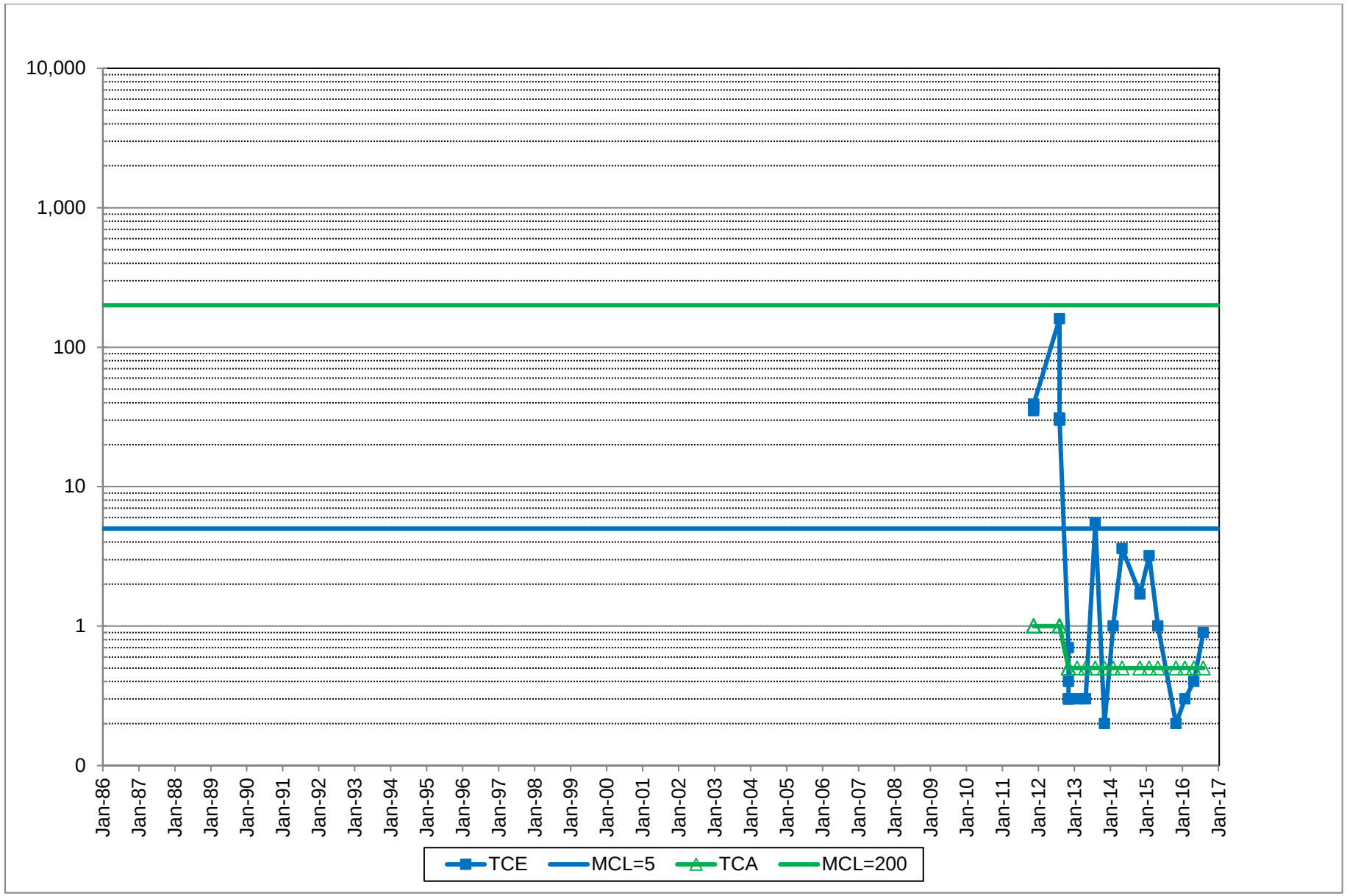


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Boeing Portland
Gresham, Oregon

BOP-77(i) Time vs Concentration Through December 31, 2016

Figure
C-36

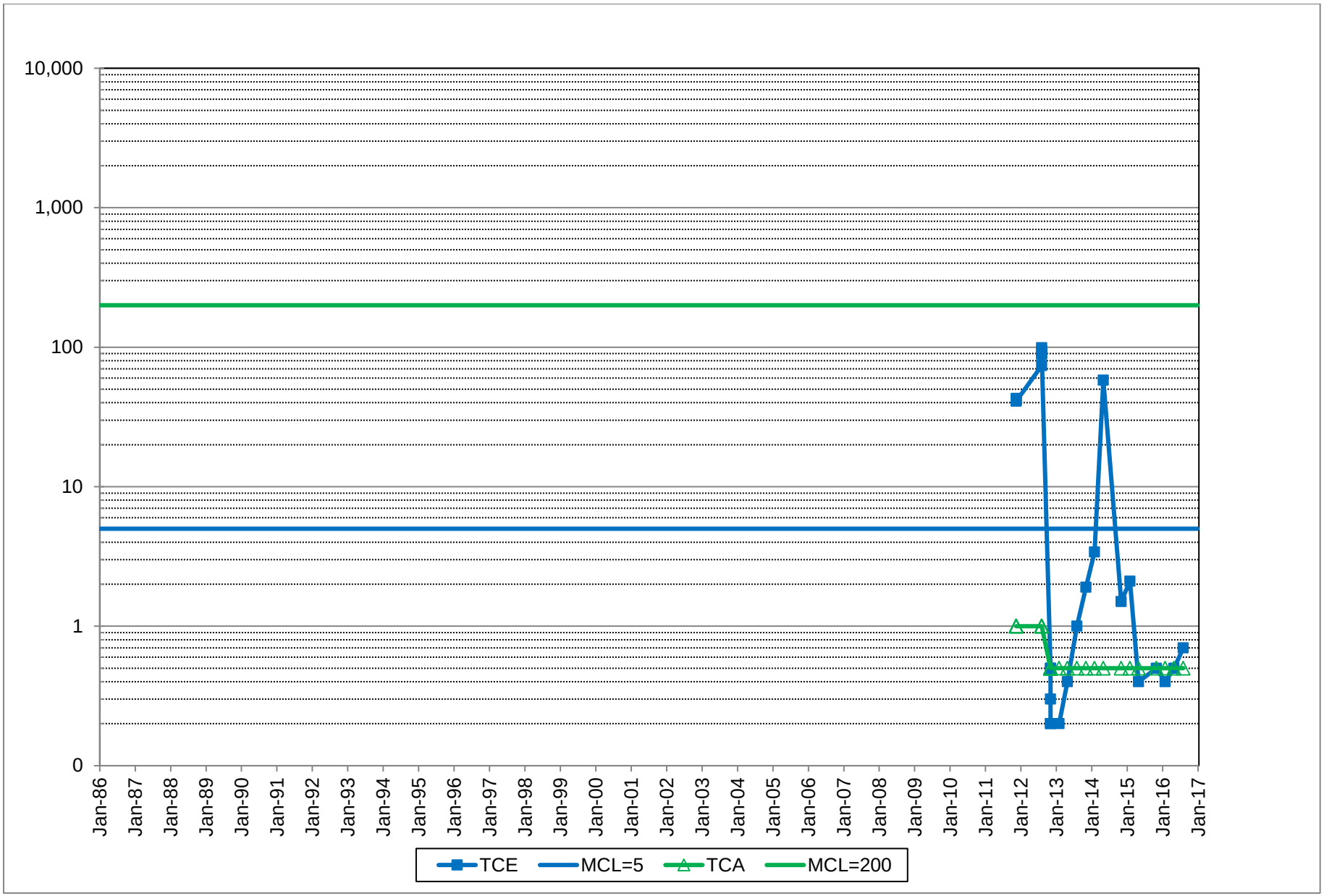


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Boeing Portland
Gresham, Oregon

BOP-78(i) Time vs Concentration Through December 31, 2016

Figure
C-37

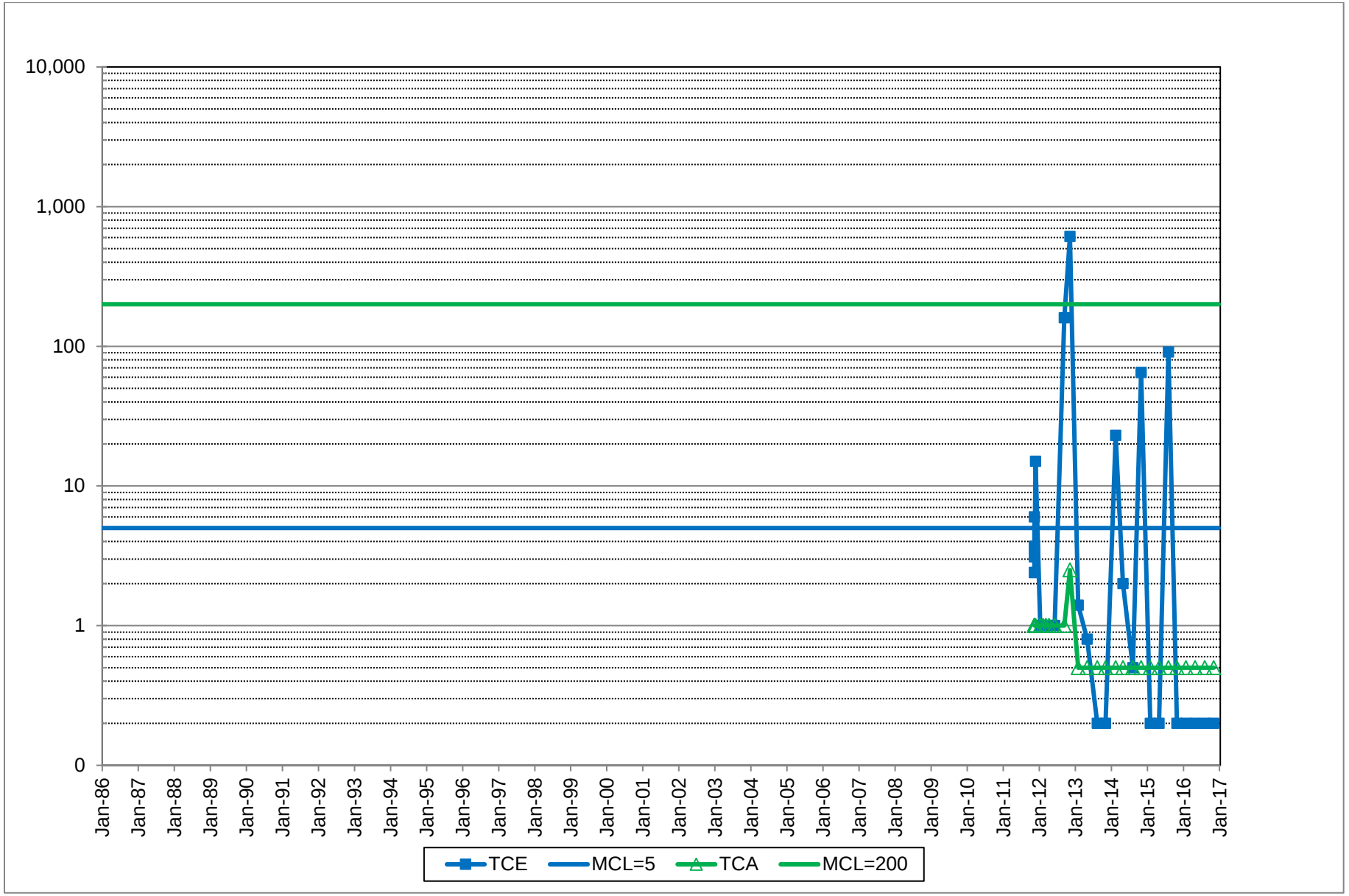


LANDAU ASSOCIATES

Boeing Portland
Gresham, Oregon

BOP-79(i) Time vs Concentration Through December 31, 2016

Figure
C-38

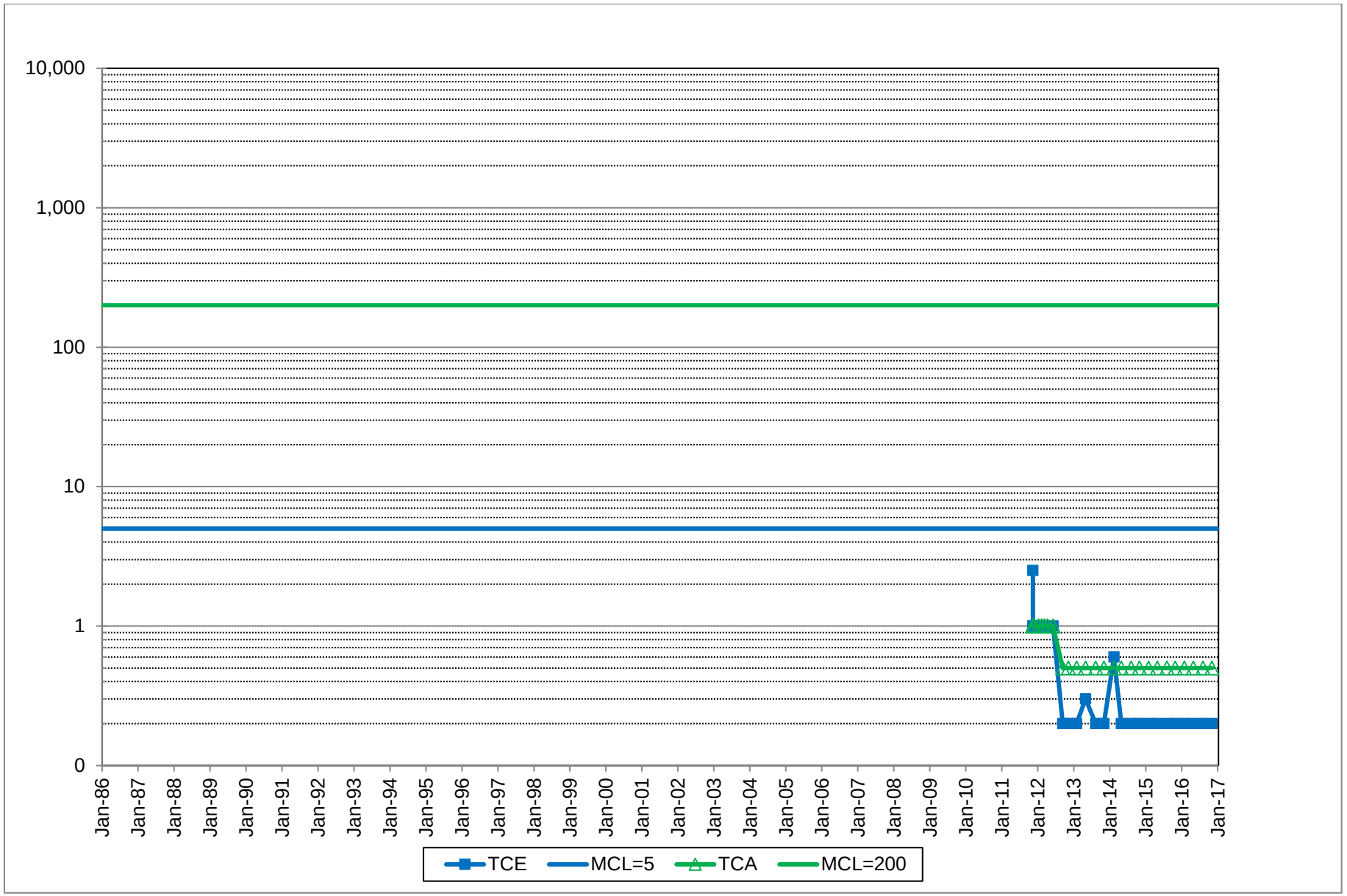


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Boeing Portland
Gresham, Oregon

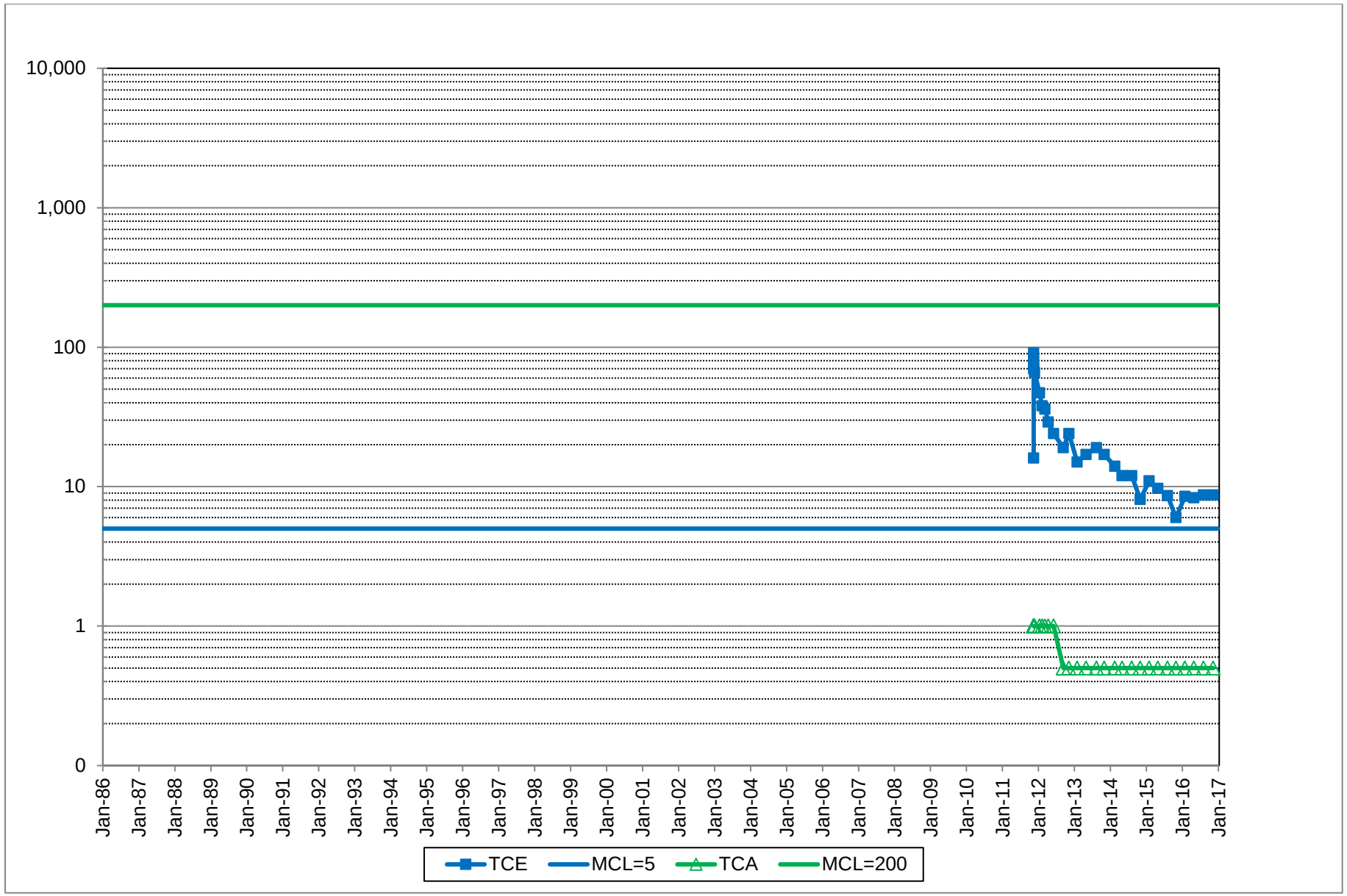
BOP-80(i) Time vs Concentration Through December 31, 2016

Figure
C-39



Boeing Portland Gresham, Oregon	**BOP-81(i) Time vs Concentration Through December 31, 2016**	Figure C-40

LANDAU ASSOCIATES

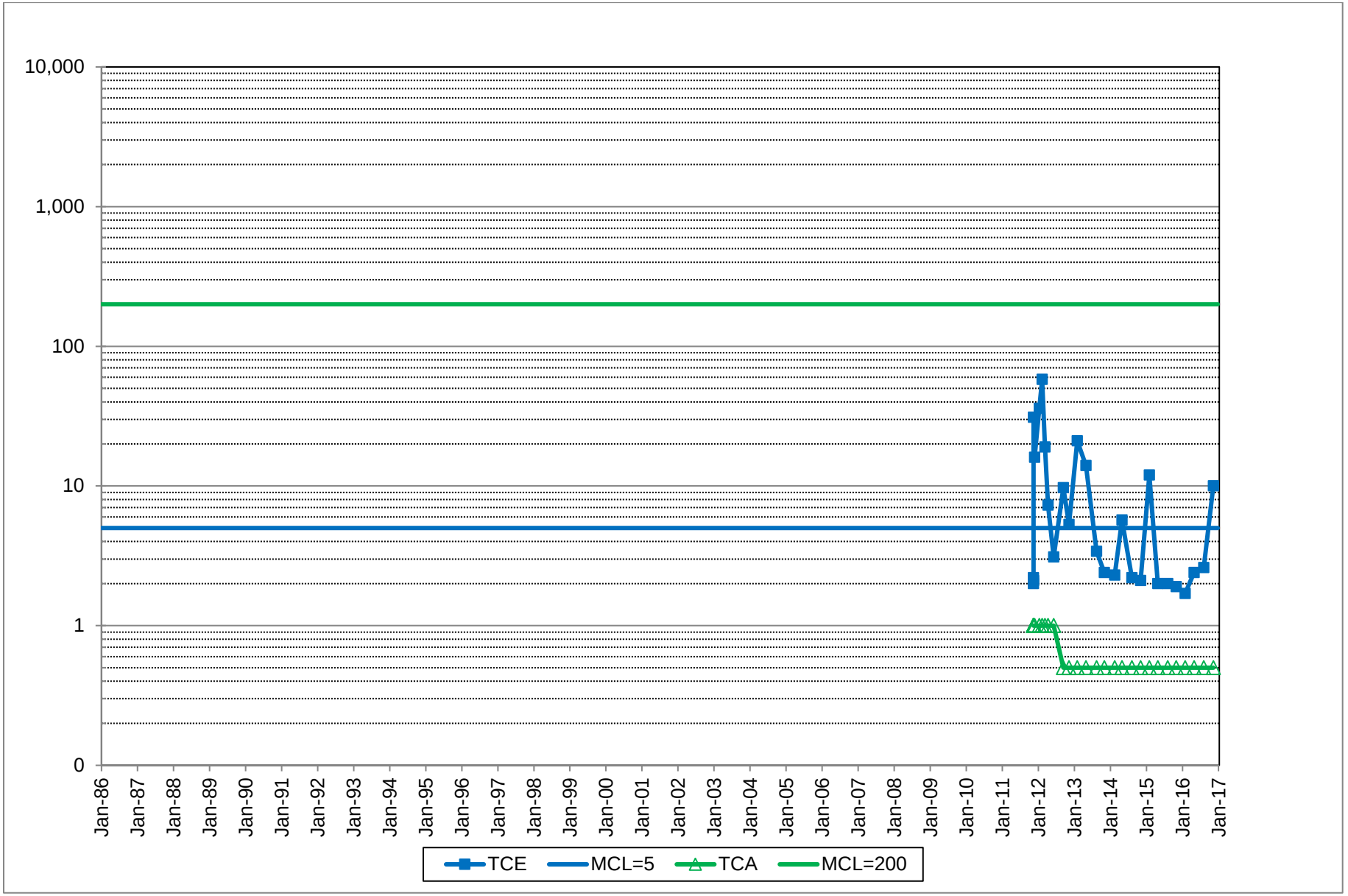


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Boeing Portland
Gresham, Oregon

BOP-82(i) Time vs Concentration Through December 31, 2016

Figure
C-41



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Boeing Portland
Gresham, Oregon

BOP-83(i) Time vs Concentration Through December 31, 2016

Figure
C-42

APPENDIX D

Historical Data

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
West Corrective Action Area Wells													
BOP-16(i)	4/16/1987	670	1100	45		47							
BOP-16(i)	5/22/1987	174	274	9.4		7.5							
BOP-16(i)	6/10/1987	540	1000	38		28 J							
BOP-16(i)	6/24/1987	490	1000	37		23 J							
BOP-16(i)	7/8/1987	450	1200	42		34							
BOP-16(i)	7/10/1987	520	1200	40		29 J							
BOP-16(i)	9/9/1987	400	890	33		34 J							
BOP-16(i)	10/14/1987	420	870	31		31							
BOP-16(i)	12/2/1987	480	1000	39		38							
BOP-16(i)	7/8/1988	790	1200	36		24							
BOP-16(i)	2/1/1989	420	630	32		53							
BOP-16(i)	8/4/1989	840	770	30		51							
BOP-16(i)	8/9/1990	330	850	23		53							
BOP-16(i)	11/5/1990	280	690	22	140	48	3.0 U						
BOP-16(i)	2/12/1991	360	850	22	240	71	15 U						
BOP-16(i)-Dup	2/12/1991	260	730	19	130	44	15 U						
BOP-16(i)	8/13/1991	180	400	11	100	35	10 U						
BOP-16(i)	1/22/1992	170	440	7.3	98	20	15 U						
BOP-16(i)-Dup	1/22/1992	160	450	6.3 J	100	14	30 U						
BOP-16(i)	7/16/1992	130	340	7.9 J	84	21	20 U						
BOP-16(i)-Dup	7/16/1992	120	310	8.6	81	23	2.0 U						
BOP-16(i)	2/17/1993	110 J	230	7.8 J	86 J	22 J	2.0 U						
BOP-16(i)	7/26/1993	92	210	7.8	60	15	2.0 U						
BOP-16(i)	2/17/1994	82	170	6.2	64	13	2.0 U						
BOP-16(i)	8/9/1994	62	160	5.1	48	12	2.0 U						
BOP-16(i)	10/24/1994	98	410	12	42	26	4.0 U						
BOP-16(i)	2/8/1995	74	160	4.4	43	14	2.0 U						
BOP-16(i)	8/28/1995	71	170	5.0	44	16	2.0 U						
BOP-16(i)	2/19/1996	56	160	4.5	42	14	2.0 U						
BOP-16(i)	8/16/1996	54	150	4.8	37	14	2.0 U						
BOP-16(i)-Dup	8/16/1996	53	150	4.8	38	13	2.0 U						
BOP-16(i)	2/18/1997	42	130	4.1	43	11	2.0 U						
BOP-16(i)	8/20/1997	41	120	4.0	38	13	2.0 U						
BOP-16(i)-Dup	8/20/1997	43	120	4.3	41	13	2.0 U						
BOP-16(i)	2/26/1998	32	110	2.9	35	9.7	2.0 U						
BOP-16(i)-Dup	2/26/1998	31	100	2.9	33	9.3	2.0 U						
BOP-16(i)	8/25/1998	31 J	110 J	3.8 J	39 J	12 J	2.0 U						
BOP-16(i)-Dup	8/25/1998	20 J	84 J	2.4 J	28 J	8.8 J	2.0 U						
BOP-16(i)	2/17/1999	15	69	2.0	23	5.5	2.0 U						
BOP-16(i)	8/21/1999	11	51	1.8	18	4.6	1.0 U						
BOP-16(i)	2/18/2000	9.4	48	1.7	17	4.2	1.0 U						
BOP-16(i)	8/27/2000	5.1	27	1.0	9.8	3.0	1.0 U						
BOP-16(i)	2/21/2001	6.5	34 J	1.3	12	3.1	1.0 U						
BOP-16(i)	8/17/2001	4.3	25	1.0 U	7.8	2.3	1.0 U						
BOP-16(i)	2/24/2002	3.1	20	1.0 U	6.4	1.8	1.0 U						
BOP-16(i)	8/16/2002	1.9	18	1.0 U	5.1	1.9	1.0 U						
BOP-16(i)	2/17/2003	2.3	15	1.0 U	4.5	1.5	1.0 U						
BOP-16(i)	8/13/2003	2.6	16	1.0 U	5.1	1.7	1.0 U						
BOP-16(i)	2/24/2004	2.2	15	1.0 U	3.9	1.5	1.0 U						
BOP-16(i)	8/12/2004	1.0 U	13	1.0 U	3.7	1.5	1.0 U						
BOP-16(i)	2/9/2005	1.3	11	1.0 U	2.9	1.1	1.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-16(i)	8/9/2005	1.4	9.6	1.0 U	2.7	1.2	1.0 U						
BOP-16(i)	2/9/2006	1.4	8.7	1.0 U	2.0	1.0	1.0 U						
BOP-16(i)	8/10/2006	1.1	10	1.0 U	2.5	1.1	1.0 U						
BOP-16(i)	2/8/2007	1.2	13	0.5	3.0	1.8	0.2 U						
BOP-16(i)	8/8/2007	1.0	9.6	0.4	2.1	1.4	0.2 U						
BOP-16(i)	2/21/2008	1.3	9.8	0.4	2.1	1.8	0.2 U	3.0	10.3	1.5 U			
BOP-16(i)	8/11/2008	1.0 U	6.2	1.0 U	1.6	1.2	1.0 U						
BOP-16(i)	2/11/2009	1.0 U	2.7	1.0 U	1.2	1.0 U	1.0 U	0.1 U	0.1 U	358			
BOP-16(i)	5/12/2009	1.0 U	1.0 U	1.0 U	11	1.0	1.0 U	1.0 U	7.4	142	20700	1.2 U	1.1 U
BOP-16(i)	8/19/2009	1.0 U	1.0 U	1.0 U	14	1.2	1.0 U	0.1 U	0.1 U	38.6	23400	1.2 U	1.1 U
BOP-16(i)	11/11/2009	1.0 U	1.0 U	1.0 U	8.1	1.0 U	5.3 J	0.1 U	0.2 U	41.6			
BOP-16(i)	2/9/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	14	0.1 U	0.1 U	4.74			
BOP-16(i)	5/5/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	15	0.1 U	0.1	3.11			
BOP-16(i)	8/11/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	16	0.1 U	0.6	1.67	23200	1.2 U	1.1 U
BOP-16(i)	11/15/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	13	0.1 U	0.9				
BOP-16(i)	1/31/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	8.1	0.1 U	0.8	1.73	19200	1.2 U	1.1 U
BOP-16(i)	5/4/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.2	0.1 U	1.5	1.8	24000	1.2 U	2.3
BOP-16(i)	8/3/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.1	0.1 U	0.9	1.53	9670	1.2 U	1.6
BOP-16(i)	11/2/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.4	0.1 U	0.5	1.55	12700	1.2 U	2.6
BOP-16(i)	2/7/2012	1.0 U	1.6	1.0 U	1.0 U	1.0 U	3.6	0.1 U	1.9	1.94	10200	1.2 U	1.7
BOP-16(i)	5/3/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.1	0.1 U	0.1 U	1.73	17100	1.2 U	3.4
BOP-16(i)	8/7/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0	0.1 U	0.5	3.57	13400	1.2 U	3.7
BOP-16(i)	11/9/2012	0.5 U	0.3	0.2 U	0.2 U	0.2 U	2.2	2.3	7.7	1.0 U	11000	5.0 U	5.0 U
BOP-16(i)	2/5/2013	0.5 U	1.5	0.2 U	0.3	0.2 U	5.0	0.1 U	3.0	1.0 U	6100	5.0 U	5.0 U
BOP-16(i)	5/6/2013	0.5 U	0.8	0.2 U	0.2 U	0.2 U	2.6	0.1 U	2.3	1.0 U	8400	5.0 U	5.0 U
BOP-16(i)	8/21/2013	0.5 U	1.2	0.2 U	0.3	0.2 U	4.5	0.1 U	3.6	1.2	3200	5.0 U	5.0 U
BOP-16(i)	11/11/2013	0.5 U	0.9	0.2 U	0.2	0.2 U	4.8	0.1 U	4.4	1.0 U	2700	5.0 U	5.0 U
BOP-16(i)	8/12/2014	0.5 U	6.2	0.2 U	1.6	0.5	3.7	0.10 U	7.2 J	1.0	2700	5.0 U	5.0 U
BOP-16(i)	11/11/2014	0.5 U	6.3	0.2 U	1.4	0.4	2.4	0.10 U	7.8	1.0 U	2200	5.0 U	5.0 U
BOP-16(i)	2/9/2015	0.5 U	8.3	0.3	1.6	0.5	3.0	0.10 U	7.4	1.0 U	2600	5.0 U	5.0 U
BOP-16(i)	5/7/2015	0.5 U	4.6	0.2 U	0.9	0.2	2.2	0.10 U	6.3	1.0 U	7700	5.0 U	5.0 U
BOP-16(i)	8/11/2015	0.5 U	9.2	0.6	1.8	0.6	1.1	0.38	7.5	1.0 U	1900	5.0 U	5.0 U
BOP-16(i)	11/6/2015	0.5 U	5.8	0.5	1.4	0.4	2.8	0.29	7.9	1.0 U	1000	5.0 U	5.0 U
BOP-16(i)	2/4/2016	0.5 U	3.5	0.2 U	0.2	0.2 U	0.3	0.1 U	5.8	1 U	4600	5.0 U	5.0 U
BOP-16(i)	5/5/2016	0.5 U	1.8	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	6.8	1.0 U	1800	5.0 U	5.0 U
BOP-16(i)	8/11/2016	0.5 U	5.0	0.2 U	3.3	0.6	1.9	0.14	7.7	1.0 U	1400	5.0 U	5.0 U
BOP-16(i)	11/8/2016	0.5 U	8.7	0.8	3.0	0.9	0.8	0.57	8.2	1.0 U	190	5.0 U	5.0 U
BOP-57(ia)	8/1/1994	5500	1400	32	81	600	2.0 U						
BOP-57(ia)	10/26/1994	410	300	10	65	65	2.0 U						
BOP-57(ia)	2/7/1995	550	800	36	300	98	2.0 U						
BOP-57(ia)	5/22/1995	830	930	24	300	150	10 U						
BOP-57(ia)	8/24/1995	1900	880	21	140	260	10 U						
BOP-57(ia)	2/9/1996	980	430	12	25	190	10 U						
BOP-57(ia)	8/16/1996	520	570	16	180	110	20 U						
BOP-57(ia)	2/20/1997	580	740	22	170	130	10 U						
BOP-57(ia)	8/21/1997	460	700	22	270	120	20 U						
BOP-57(ia)	3/2/1998	180	380	9.6	110	27	6.0 U						
BOP-57(ia)	8/26/1998	120	350	13	190	40	2.0 U						
BOP-57(ia)	2/16/1999	230	540	11	120	66	2.0 U						
BOP-57(ia)	8/24/1999	130	170	6.5	38	31	1.0 U						
BOP-57(ia)	2/23/2000	76	190	6.9	1.0 U	26	1.0 U						
BOP-57(ia)	8/31/2000	32	140	5.8	60	13	1.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-57(ia)	2/26/2001	21	130	7.0	67	5.1	2.0 U						
BOP-57(ia)	8/21/2001	13	110	5.7	55	5.8	1.0 U						
BOP-57(ia)	3/10/2002	9.7	72	4.5	34	4.2	1.0 U						
BOP-57(ia)	8/20/2002	4.4	56	4.3	27	3.5	1.0 U						
BOP-57(ia)	2/25/2003	3.8	34	2.8	15	2.1	1.0 U						
BOP-57(ia)	8/15/2003	4.0	46	3.9	22	1.9	1.0 U						
BOP-57(ia)	2/27/2004	4.3	44	3.7	15	2.0	1.0 U						
BOP-57(ia)	8/20/2004	1.8	46	3.9	18	1.2	1.0 U						
BOP-57(ia)	2/15/2005	2.5	36	3.1	12	1.0 U	1.0 U						
BOP-57(ia)	8/9/2005	1.2	31	3.1	12	1.0 U	1.0 U						
BOP-57(ia)	2/9/2006	1.1	17	1.4	5.0	1.0 U	1.0 U						
BOP-57(ia)	8/10/2006	1.0 U	15	1.0 U	4.8	1.0 U	1.0 U						
BOP-57(ia)	2/9/2007	1.0	13	1.3	4.2	1.0 U	1.0 U						
BOP-57(ia)	8/14/2007	0.8	15	2.3	4.6	0.4	0.2 U						
BOP-57(ia)	2/19/2008	0.9	18	2.3	4.1	0.8	0.2 U						
BOP-57(ia)	8/15/2008	1.0 U	12	1.6	2.6	1.0 U	1.0 U						
BOP-57(ia)	2/11/2009	1.0 U	7.4	1.6	4.9	1.0 U	1.0 U						
BOP-57(ia)	8/21/2009	1.0 U	13	3.8	3.4	1.0 U	1.0 U						
BOP-57(ia)	2/3/2010	1.0 U	13	3.5	2.0	1.0 U	1.0 U						
BOP-57(ia)	8/15/2010	1.0 U	13	5.5	3.0	1.0 U	1.0 U						
BOP-57(ia)	2/7/2011	1.0 U	19	2.2	1.8	1.0 U	1.0 U						
BOP-57(ia)	8/11/2011	1.0 U	11	5.1	2.7	1.0 U	1.0 U						
BOP-57(ia)	2/2/2012	1.3	18	2.9	7.5	1.0 U	1.0 U						
BOP-57(ia)	8/9/2012	1.0 U	13	1.0 U	15	5.3	3.5						
BOP-57(ia)	2/4/2013	1.1	15	0.8	3.0	0.5	0.2 U						
BOP-57(ia)	8/5/2013	0.5 U	13	2.2	2.8	0.4	0.2 U						
BOP-57(ia)	8/5/2014	0.6	18	1.9	3.8	1.7	0.2 U						
BOP-57(ia)	2/3/2015	0.5 U	1.7	0.2 U	0.3	0.2 U	0.2 U						
BOP-57(ia)	8/4/2015	0.5 U	3.4	0.2 U	0.8	0.2 U	0.2 U						
BOP-57(ia)	2/1/2016	0.5 U	2.4	0.2	0.4	0.2 U	0.2 U						
BOP-57(ia)	8/3/2016	0.5 U	11	1.7	2.2	0.3	0.2 U						
E-5	3/28/1989	8300	2300	98	160	320							
E-5	4/6/1989	11000	2200	92	170	450							
E-5	4/12/1989	18000	1900			590							
E-5	4/18/1989	14000	2100			540							
E-5	4/25/1989	11000	1900										
E-5	5/2/1989	13000	2200			570							
E-5	5/9/1989	19000	1700			730							
E-5	5/16/1989	22000	1700			1000							
E-5	5/23/1989	27000	1600			1100							
E-5	5/30/1989	21000	1200			680							
E-5	6/7/1989	24000	1500	500 U		500 U							
E-5	6/13/1989	34000	1500	150 J	110 M	1200							
E-5	6/20/1989	39000	1500	110 J	130 J	1400							
E-5	6/27/1989	29000	1400	90	87 J	980							
E-5	7/5/1989	26000	1400	110 M	130 J	820							
E-5	7/11/1989	23000	1500	120	170	720							
E-5	7/18/1989	18000	1600	150	170 J	630							
E-5	7/25/1989	21000	1500	110 J	140 J	710							
E-5	8/1/1989	22000	1700	170	170 J	830							
E-5	8/8/1989	28000	1600	130 M	290	980							
E-5	8/15/1989	27000	1900	200	320	940							

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-5	8/22/1989	27000	1700	200	300	980							
E-5	8/29/1989	31000	2200	220	350	1100							
E-5	9/5/1989	300	2100	140	380	990							
E-5	11/15/1989	17000	2200	130 J	280	860							
E-5	11/21/1989	37000	2500	150	310	1700							
E-5	11/28/1989	38000	2500	170 J	260	1800							
E-5	12/5/1989	19000	2300	160 J	270	930							
E-5	12/12/1989	14000	2100	130	210	610							
E-5	12/19/1989	15000	2300	140 J	220	560							
E-5	1/4/1990	26000	2700	140 J	300	1300							
E-5	1/17/1990	14000	2500	150 J	250	670							
E-5	1/31/1990	13000	2300	98 J	220	550							
E-5	2/14/1990	13000	2200		190 J	430							
E-5	2/28/1990	13000	2000	99 M	150 J	290							
E-5	3/14/1990	9500	2400			460							
E-5	3/28/1990	4500	2200	120	180	290							
E-5	4/11/1990	7200	2600	170	190	500							
E-5	4/25/1990	3400	1800	100	150	230							
E-5	5/8/1990	17000	3000	120 J	250	1200							
E-5	5/22/1990	22000	2800		210	1700							
E-5	6/6/1990	21000	3300		160 J	1500							
E-5	6/19/1990	17000	2700		140 J	1000							
E-5	7/3/1990	17000	2500	110 J	150 J	950							
E-5	7/17/1990	16000	3400	120 J	440	1200							
E-5	7/31/1990	14000	2600		150 J	1100							
E-5	8/14/1990	14000	3600 B	120	230	790 JB							
E-5	8/28/1990	6500	2200	110 M	180	520							
E-5	9/10/1990	4200	1600	97 M	160	320							
E-5	9/27/1990	4400	1800	120	190	390							
E-5	10/9/1990	4600	2200	130	230	480							
E-5	10/29/1990	7700	2000	120	180	650							
E-5	11/14/1990	8200	2000	98	150	650							
E-5	11/28/1990	10000	2200	100	170	790	150 U						
E-5	12/11/1990	12000	1900		120	810	300 U						
E-5	1/2/1991	12000	2100	85 M	140	960	300 U						
E-5	1/15/1991	16000	1800	69 J	120	1000	300 U						
E-5	2/5/1991	15000	1500	64 M	110	990	300 U						
E-5	3/5/1991	9900	1100	51 M	55 M	580	300 U						
E-5	4/2/1991	5500	970	100 U	65 J	330	200 U						
E-5	5/7/1991	9500	1400	100 U	100 U	700	200 U						
E-5	6/3/1991	13000	1300	100 U	54 J	720	200 U						
E-5	7/1/1991	19000	2100	56 M	58 M	1200	200 U						
E-5	8/5/1991	6000	1100	100 U	53 J	500	200 U						
E-5	9/3/1991	2800	1200	48	58	290	60 U						
E-5	10/2/1991	2100	860	51	56	150	50 U						
E-5	11/4/1991	1200	740	54	64	110	40 U						
E-5	12/4/1991	8900	1300	49	70	570	40 U						
E-5	1/6/1992	3500	970	37	49	290	50 U						
E-5	2/4/1992	7100	1200	37	52	1000	4.0 U						
E-5	3/3/1992	7700	770	26 J	31 J	580	100 U						
E-5	4/6/1992	7800	850	37 J	40 J	600	100 U						
E-5	5/4/1992	5200	950	28 M	36 J	510	100 U						
E-5	6/2/1992	7800	760	29 M	34 J	670	100 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-5	7/6/1992	5200	600	21 M	32 M	660	100 U						
E-5	8/10/1992	1300	490	32	35	140	50 U						
E-5	9/1/1992	4000	710	37	46	420	40 U						
E-5	10/1/1992	750	440	26	26	93	10 U						
E-5	11/2/1992	530	350	23	29	79	20 U						
E-5	12/1/1992	510	450	41	40	83	10 U						
E-5	1/1/1993	3300	660	26	34	250	10 U						
E-5	2/1/1993	5400	990	28	35	370	40 U						
E-5	3/3/1993	5600	1130	50 U	49 J	560	100 U						
E-5	3/29/1993	3800	770	50 U	50 U	310	100 U						
E-5	4/28/1993	4300	1200	30 M	32 M	390	100 U						
E-5	5/25/1993	4800	1000	27 J	36 J	510	100 U						
E-5	6/23/1993	3200	990	50 U	50 U	260	100 U						
E-5	7/30/1993	3800	910	50 U	50 U	360	100 U						
E-5	8/25/1993	5800	1800	56	46 J	580	100 U						
E-5	9/29/1993	1700	770	33 J	50 U	200	100 U						
E-5	10/27/1993	1400	840	27	25	140	20 U						
E-5	11/22/1993	840	580	22	24	100	20 U						
E-5	12/27/1993	2000	970	25	38	160	20 U						
E-5	1/26/1994	2600	1100	28	41	250	20 U						
E-5	2/23/1994	2500	1400	39	52	270	40 U						
E-5	4/4/1994	3400	960	24	30	230	40 U						
E-5	4/26/1994	3800 J	910	20	28	300	40 U						
E-5	6/29/1994	2200	530	20 U	20 U	140	40 U						
E-5	12/21/1994	1300	630	25	43	200	2.0 U						
E-5	3/3/1995	2500 J	640 J	21	25	250	2.0 U						
E-5	6/1/1995	2700	760	24	26	260	2.0 U						
E-5	8/29/1995	2200	740	45 U	45 U	300	90 U						
E-5	11/9/1995	600	320	25 U	25 U	110	50 U						
E-5	3/4/1996	670	170	20 U	20 U	89	40 U						
E-5	5/31/1996	650	180	5.8	9.6	88	10 U						
E-5	8/26/1996	720	350	20 U	22	130	40 U						
E-5	11/20/1996	270	350	8.9	29	65	10 U						
E-5	5/27/1997	260	310	9.2	24	70	10 U						
E-5	9/2/1997	290	330	14	25	100	6.0 U						
E-5	11/3/1997	160	280	13	24	54	2.0 U						
E-5	2/24/1998	53	140	4.9	14	12	6.0 U						
E-5	5/5/1998	110 J	290	12	22	40	2.0 U						
E-5	8/3/1998	100	170	8.3	14	35	2.0 U						
E-5	11/2/1998	23	160	14	14	14	2.0 U						
E-5	2/1/1999	24	140	5.8	10	6.9	2.0 U						
E-5	5/3/1999	160	240	10	16	23	1.0 U						
E-5	8/2/1999	12	150	9.1	11	5.5	1.0 U						
E-5	11/1/1999	4.8	140	8.8	10	4.7	1.0 U						
E-5	2/4/2000	45	99	5.6	7.2	4.9	1.0 U						
E-5	5/1/2000	6.4	110	5.5	7.8	3.8	1.0 U						
E-5	8/2/2000	5.4	83	4.9	7.5	3.1	1.0 U						
E-5	11/1/2000	3.6	90	6.5	8.9	2.6	1.0 U						
E-5	2/1/2001	3.4	86	5.7	8.8	2.0	1.0 U						
E-5	5/1/2001	1.8	91	5.4	8.8	2.2	1.0 U						
E-5	8/6/2001	1.0 U	88	5.7	10	2.2	1.0 U						
E-5	11/1/2001	1.1	98	5.8	9.6	1.0 U	1.0 U						
E-5	2/2/2002	1.3	58	3.2	4.5	1.4	1.0 U						

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-5	5/8/2002	1.0 U	64	3.5	5.3	1.6	1.0 U						
E-5	8/1/2002	1.0 U	76	4.9	12	1.8	1.0 U						
E-5	11/4/2002	1.0 U	67	5.2	11	2.0	1.0 U						
E-5	12/4/2002	1.0 U	49	3.7	9.9	1.3	1.0 U						
E-5	2/4/2003	1.0 U	28	2.6	4.3	1.0 U	1.0 U						
E-5	5/7/2003	2.6	28	2.6	4.6	1.0 U	1.0 U						
E-5	8/6/2003	2.5	27	2.7	4.6	1.0 U	1.0 U						
E-5	11/5/2003	1.0 U	35	2.7	5.3	1.0 U	1.0 U						
E-5	2/3/2004	1.0 U	22	2.3	3.8	1.0 U	1.0 U						
E-5	5/6/2004	1.0 U	29	2.2	4.5	1.0 U	1.0 U						
E-5	8/3/2004	1.0 U	36	2.9	5.7	1.0 U	1.0 U						
E-5	11/1/2004	1.0 U	29	2.5	4.3	1.0 U	1.0 U						
E-5	2/3/2005	1.0 U	19	2.0	3.0	1.0 U	1.0 U						
E-5	5/3/2005	1.0 U	21	2.1	3.1	1.0 U	1.0 U						
E-5	8/2/2005	1.0 U	19	2.0	3.2	1.0 U	1.0 U						
E-5	12/16/2005	0.2	24	2.3	3.3	0.4	0.2 U						
E-5	2/6/2006	1.0 U	21	1.9	2.4	1.0 U	1.0 U						
E-5	5/9/2006	1.0 U	20	1.6	2.8	1.0 U	1.0 U						
E-5	8/8/2006	1.0 U	9.9	1.0 U	1.2	1.0 U	1.0 U						
E-5	11/29/2006	0.2 U	17	1.9	1.6	0.2 U	0.2 U						
E-5	2/6/2007	0.2 U	20	2.1	2.6	0.3	0.2 U						
E-5	5/10/2007	2.2	27	2.4	6.1	3.5	0.4 U						
E-5	8/8/2007	0.2 U	18	2.2	2.7	0.9	0.2 U						
E-5	11/8/2007	1.0 U	14	1.8	1.8	1.0 U	1.0 U						
E-5	2/12/2008	1.0 U	14	2.4	2.4	1.0 U	1.0 U						
E-5	5/12/2008	1.0 U	7.2	1.3	1.0 U	1.0 U	1.0 U						
E-5	8/8/2008	1.0 U	7.5	1.6	1.0 U	1.0 U	1.0 U						
E-5	11/5/2008	0.6 U	34	3.4	3.4	0.6 U	0.6 U						
E-5	2/3/2009	1.0 U	15	4.4	1.0 U	1.0 U	1.0 U						
E-5	8/6/2009	1.0 U	15	1.4	2.0	1.0 U	1.0 U						
E-5	8/6/2010	1.0 U	5.2	1.4	1.0 U	1.0 U	1.0 U						
E-5	8/3/2011	1.0 U	6.8	1.0 U	1.0 U	1.0 U	1.0 U						
E-5	8/8/2012	1.0 U	4.3	1.0 U	1.0 U	1.0 U	1.0 U						
E-5	8/2/2013	0.5 U	1.8	0.6	0.2 U	0.2 U	0.2 U						
E-5	8/12/2014	0.5 U	5.2	0.4	0.9	0.5	0.4						
E-5	8/13/2015	0.5 U	1.3	0.2 U	0.3	0.2 U	0.2 U						
E-5	8/15/2016	0.5 U	0.4	0.2 U	0.2 U	0.2 U	0.2 U						
E-11	3/27/1991	1600	1600	66	540	170	40 U						
E-11	3/28/1991	1300	1900	80	490	190	40 U						
E-11	4/2/1991	830	2300	87	440	150	40 U						
E-11	4/17/1991	820	2100	86	380	140	40 U						
E-11	5/7/1991	730	1600	67	320	140	40 U						
E-11	5/21/1991	910	1400	64	370	120	40 U						
E-11	6/3/1991	920	1600	58	330	150	40 U						
E-11	6/17/1991	960	1500	62	350	160	40 U						
E-11	7/1/1991	1100	1400	58	310	180	40 U						
E-11	7/15/1991	1200	1700	69	400	210	40 U						
E-11	8/5/1991	1400	1400	60	330	220	40 U						
E-11	8/19/1991	1200	1400	52	300	210	40 U						
E-11	9/3/1991	1600	1700	60	330	210	60 U						
E-11	9/16/1991	1500	1000	48	280	160	40 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-11	10/2/1991	1800	1300	54	290	150	40 U						
E-11	10/16/1991	2100	1400	62	350	190	20 U						
E-11	11/4/1991	1900	1300	52	300	160	30 U						
E-11	12/4/1991	2200	1200	50	250	250	30 U						
E-11	1/6/1992	2200	1300	58	270	230	30 U						
E-11	4/6/1992	2600	1200	71	320	340	20 U						
E-11	5/4/1992	1800	960	34	240	250	50 U						
E-11	6/2/1992	1600	790	39	240	170	50 U						
E-11	7/6/1992	3100	1100	44	250	520	50 U						
E-11	8/10/1992	3300	1400	65	320	350	40 U						
E-11	9/1/1992	2600	1300	54	300	260	50 U						
E-11	10/1/1992	3900	1500	69	310	420	100 U						
E-11	11/2/1992	2600	1200	41	350	300	20 U						
E-11	12/1/1992	5700	1900	140	290	730	100 U						
E-11	1/1/1993	1800	880	40	220	230	40 U						
E-11	2/1/1993	2300	1100	45	250	270	40 U						
E-11	3/3/1993	5000	1700	86	340	690	40 U						
E-11	3/29/1993	2700	1000	39 M	240	330	100 U						
E-11	4/28/1993	2800	950	50 U	210	320	100 U						
E-11	5/25/1993	3500	1500	84	280	570	100 U						
E-11	6/23/1993	2800	1300	73	200	290	100 U						
E-11	7/30/1993	1800	950	63	160	270	100 U						
E-11	8/25/1993	1800	1100	59	230	270	100 U						
E-11	9/29/1993	1400	690	27	190	190	20 U						
E-11	10/27/1993	1800	860	37	200	240	10 U						
E-11	11/22/1993	1300	850	38	200	180	20 U						
E-11	12/27/1993	1400	900	33	210	180	20 U						
E-11	1/26/1994	1200	720	29	160	180	20 U						
E-11	2/23/1994	1200	780	33	190	180	20 U						
E-11	4/4/1994	1400	770	27	190	180	20 U						
E-11	4/26/1994	1400 J	830	35	190	220	20 U						
E-11	6/29/1994	1200	790	38	190	180	20 U						
E-11	10/26/1994	280	470	19	160	58	2.0 U						
E-11	12/21/1994	850	720	36	210	180	2.0 U						
E-11	3/3/1995	760 J	630	28	180	140	20 U						
E-11	6/1/1995	730	600	25 U	150	130	50 U						
E-11	8/29/1995	1200	830	32	220	200	20 U						
E-11	11/9/1995	1200	690	30	160	200	20 U						
E-11	3/4/1996	630	580	25	140	140	20 U						
E-11	5/31/1996	600	630	25	170	130	20 U						
E-11	8/26/1996	500	540	20	170	110	20 U						
E-11	11/20/1996	550	620	20	170	140	20 U						
E-11	3/6/1997	390	510	21	150	130	10 U						
E-11	5/27/1997	610	540	23	140	160	10 U						
E-11	9/2/1997	400	490	19	160	110	10 U						
E-11	11/3/1997	430	590	24	180	120	2.0 U						
E-11	2/24/1998	410	430	16	130	99	10 U						
E-11	5/5/1998	520 J	610	30	150	150	2.0 U						
E-11	8/3/1998	440	480	24	140	110	2.0 U						
E-11	11/2/1998	310	480	18	120	73	10 U						
E-11	2/1/1999	220 J	370 J	22 J	130 J	88 J	2.0 U						
E-11	5/3/1999	150	490	15	140	47	1.0 U						
E-11	8/2/1999	94	260	13	110	31	1.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-11	11/1/1999	90	220	10	80	32	5.0 U						
E-11	2/4/2000	120	300	14	76	42	1.0 U						
E-11	5/1/2000	120	160	12	65	38	1.0 U						
E-11	8/2/2000	88	170	8.6	45	31	1.0 U						
E-11	11/1/2000	98	200	9.3	48	30	1.0 U						
E-11	2/1/2001	82	180	9.7	50	29	1.0 U						
E-11	5/1/2001	74	180	9.0	54	30	1.0 U						
E-11	8/6/2001	48	140	7.3	40	7.0	2.0 U						
E-11	11/1/2001	55	170	7.4	46	21	1.0 U						
E-11	2/2/2002	41	130	6.4	36	16	2.0 U						
E-11	5/8/2002	30	110	5.6	29	14	1.0 U						
E-11	8/1/2002	36	120	7.0	31	17	1.0 U						
E-11	11/4/2002	54	140	8.1	43	27	1.0 U						
E-11	2/4/2003	42	110	6.8	32	18	1.0 U						
E-11	5/7/2003	45	110	6.9	31	21	1.0 U						
E-11	8/6/2003	41	99	6.4	26	16	1.0 U						
E-11	11/5/2003	39	110	5.4	29	18	1.0 U						
E-11	2/3/2004	25	100	6.0	26	16	1.0 U						
E-11	5/6/2004	26	90	4.6	24	14	1.0 U						
E-11	8/3/2004	30	95	5.1	23	12	1.0 U						
E-11	11/1/2004	20	89	4.8	23	12	1.0 U						
E-11	2/3/2005	25	80	5.0	16	11	1.0 U						
E-11	5/3/2005	20	70	4.0	17	7.8	1.0 U						
E-11	8/2/2005	19	60	4.4	15	11	1.0 U						
E-11	12/16/2005	18	50	3.6	12	8.6	1.0 U						
E-11	2/6/2006	21	62	4.0	13	10	1.0 U						
E-11	5/9/2006	8.2	38	2.4	8.6	5.0	1.0 U						
E-11	8/8/2006	9.8	47	1.8	10	5.2	1.0 U						
E-11	11/9/2006	11	48	2.8	10	6.4	1.0 U						
E-11	2/6/2007	9.8	43	3.1	9.0	2.6	1.0 U						
E-11	5/10/2007	9.0	40	2.5	8.6	4.8	1.0 U						
E-11	8/8/2007	7.4	33	2.2	7.0	4.5	1.0 U						
E-11	11/7/2007	8.4	38	2.9	8.7	6.8	1.0 U						
E-11	2/12/2008	8.3	34	2.6	7.1	5.8	1.0 U						
E-11	5/12/2008	7.8	35	2.8	7.0	5.7	1.0 U						
E-11	8/8/2008	8.9	34	2.5	6.8	6.6	1.0 U						
E-11	11/5/2008	4.8	24	1.8	5.9	3.8	0.6 U						
E-11	5/7/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.9	940	742	4.7	3.1
E-11	8/18/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	864	16300	1.2 U	1.1 U
E-11	11/5/2009	1.0 U	1.0 U	1.0 U	1.7	1.0 U	1.0 U	100 UJ	100 U	316			
E-11	2/2/2010	1.0 U	2.1	1.0 U	31	1.2	1.0 U						
E-11	5/5/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	282	15600	16.3	1.1 U
E-11	8/9/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	0.3	382	16200	11.6	2.0
E-11	11/15/2010	1.0 U	1.0 U	1.0 U	5.5	1.0 U	1.0 U	0.1 U	0.3	66			
E-11	2/3/2011	1.0 U	1.0 U	1.0 U	4.1	1.0 U	1.0 U						
E-11	5/2/2011	1.0 U	1.0 U	1.0 U	3.3	1.0 U	1.0 U	0.1 U	0.1 U	43.6	23900	1.2 U	1.1 U
E-11	8/2/2011	1.0 U	1.0 U	1.0 U	6.6	1.0 U	1.0 U	0.1 U	0.1 U	28.9	22100	1.2 U	1.1 U
E-11	10/31/2011	1.0 U	1.0 U	1.0 U	6.1	1.0 U	1.0 U	0.1 U	0.3	28.2	20600	1.2 U	1.1 U
E-11	2/7/2012	1.0 U	1.0 U	1.0 U	7.8	1.0 U	1.0 U	0.1 U	0.3	30	56300 E	2.4	1.1 U
E-11	5/7/2012	1.0 U	1.0 U	1.0 U	9.6	1.0 U	1.0 U	0.1 U	0.4	29.8	24200	1.3	1.1 U
E-11	8/8/2012	1.0 U	1.0 U	1.0 U	13	1.0 U	1.0 U	0.1 U	1.1	28.4	34900	1.4	1.1 U
E-11	11/9/2012	0.5 U	0.2 U	0.2 U	12	0.2	0.2	0.1 U	1.0 U	25.9	34000	11	5.0 U
E-11	2/4/2013	0.5 U	0.2 U	0.2 U	8.9	0.2 U	0.2 U	0.1 U	1.0 U	24.3	33000	5.0 U	5.0 U

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-11	5/7/2013	0.5 U	0.3	0.2 U	7.8	0.2 U	0.2 U	0.1 U	1.0 U	22.8	26000	5.0 U	5.0 U
E-11	8/2/2013	0.5 U	0.2 U	0.2 U	5.9	0.2 U	0.2 U	0.1 U	1.0 U	23.3	27000	5.0 U	5.0 U
E-11	11/12/2013	0.5 U	0.2 U	0.2 U	6.0	0.2 U	0.2 U	0.1 U	1.0 U	27.5	36000	5.9	5.0 U
E-11	8/12/2014	0.5 U	0.2	0.2 U	7.6	0.3	0.2 U	0.10 U	1.0 U	25	21000	5.0 U	5.0 U
E-11	11/5/2014	0.5 U	0.2 U	0.2 U	3.0	0.2 U	0.2 U	0.10 U	1.0 U	24	17000	5.0 U	5.0 U
E-11	2/4/2015	0.5 U	0.2 U	0.2 U	1.9	0.2 U	0.2 U	0.10 U	1.0 U	27.4	14000	5.0 U	5.0 U
E-11	8/5/2015	0.5 U	0.2 U	0.2 U	0.3	0.2 U	0.2 U	0.10 U	1.0 U	259	36000	5.0 U	5.0 U
E-11	8/22/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	1.0 U	45.4	23000	5.1	5.0 U
E-15	1/20/1999	340	740	24	92	160	2.0 U						
E-15	2/1/1999	280 J	690 J	31 J	93 J	160 J	2.0 U						
E-15	3/2/1999	210	540	21	61	160	2.0 U						
E-15	5/3/1999	390	990	30	130	180	23 U						
E-15	8/2/1999	71	160	8.2	31	45	1.0 U						
E-15	11/1/1999	32	96	4.7	37	39	1.0 U						
E-15	2/4/2000	52	130	5.9	29	32	1.0 U						
E-15	5/1/2000	71	160	6.3	34	52	1.0 U						
E-15	8/1/2000	110	260	8.8	42	62	1.0 U						
E-15	11/1/2000	140	290	10	56	78	5.0 U						
E-15	2/1/2001	29	100 J	4.2	27	21	1.0 U						
E-15	5/1/2001	31	100	4.2	30	26	1.0 U						
E-15	8/6/2001	49	130	5.0	29	33	1.0 U						
E-15	11/1/2001	17	63	2.6	20	15	1.0 U						
E-15	2/2/2002	82	190	6.0	29	54	5.0 U						
E-15	5/8/2002	92	180	7.4	38	52	1.0 U						
E-15	8/1/2002	71	160	7.1	30	22	1.0 U						
E-15	11/4/2002	84	170	7.8	31	47	1.0 U						
E-15	2/4/2003	46	97	5.5	18	29	1.0 U						
E-15	5/7/2003	49	100	4.7	20	31	1.0 U						
E-15	8/6/2003	50	110	6.2	20	28	1.0 U						
E-15	11/5/2003	21	80	3.2	19	19	1.0 U						
E-15	2/3/2004	8.4	55	3.7	14	9.3	1.0 U						
E-15	5/6/2004	45	100	4.7	18	29	1.0 U						
E-15	8/3/2004	25	80	3.6	15	20	1.0 U						
E-15	11/1/2004	30	72	3.6	14	31	1.0 U						
E-15	2/3/2005	22	60	2.7	12	14	1.0 U						
E-15	5/3/2005	47	77	4.5	15	27	1.0 U						
E-15	8/2/2005	20	55	3.2	11	18	1.0 U						
E-15	12/16/2005	26	61	3.3	11	23	1.0 U						
E-15	2/6/2006	22	53	2.9	8.2	18	1.0 U						
E-15	5/9/2006	14	40	2.4	7.1	14	1.0 U						
E-15	8/8/2006	14	45	2.1	7.5	12	1.0 U						
E-15	11/9/2006	16	43	3.4	8.4	16	0.2 U						
E-15	2/6/2007	14	41	2.7	7.3	14	1.0 U						
E-15	5/10/2007	17	47	2.8	8.2	19	1.0 U						
E-15	8/8/2007	12	38	2.4	6.0	13	1.0 U						
E-15	11/7/2007	16	41	3.0	7.4	19	1.0 U						
E-15	2/14/2008	9.7	32	2.7	5.6	12	1.0 U	2.04	6.2	1.5 U			
E-15	5/12/2008	8.1	30	3.0	4.7	9.9	1.0 U						
E-15	8/8/2008	8.7	33	2.7	5.3	9.8	1.0 U						
E-15	11/5/2008	11	34	3.7	6.1	12	0.6 U						
E-15	5/7/2009	1.0 U	4.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	45.4	540	103	4.0	8.8
E-15	8/18/2009	1.0 U	8.8	1.0 U	1.1	1.3	1.0 U	1.0 U	1.0 U	381	19900	1.2 U	8.8

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-15	11/5/2009	1.0 U	1.0 U	1.0 U	5.7	1.0 U	1.0 U	100 UJ	100 U	386			
E-15	2/2/2010	1.0 U	1.4	1.0 U	7.8	1.0 U	1.0 U	5.1	5.0 U	344			
E-15	5/5/2010	1.0 U	1.6	1.0 U	6.0	1.0 U	1.0 U	1.0 U	1.0 U	124	19500	1.2 U	1.1 U
E-15	8/9/2010	1.0 U	1.0 U	1.0 U	1.3	1.0 U	8.5	0.1 U	0.1	24.2	22200	1.2 U	1.1 U
E-15	11/15/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.9	0.1 U	1.4	12.6			
E-15	1/31/2011	5.0 U	22	5.0 U	66	5.0 U	5.8	0.1 U	6.8	2.19	1.8	1.2 U	1.1 U
E-15	5/2/2011	1.0 U	1.0 U	1.0 U	1.6	1.0 U	5.5	0.1 U	0.1 U	5.54	21600	1.7	1.5
E-15	8/2/2011	1.0 U	16	1.8	67	1.0 U	1.0 U	0.1 U	0.4	2.98	3860	1.2 U	1.1 U
E-15	10/31/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.2	0.1 U	1.1	5.77	20500	3.4	1.1 U
E-15	2/7/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1	0.6	10.2	34600	4.3	1.1 U
E-15	5/7/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	0.2	8.12	39700	3.3	1.1 U
E-15	8/8/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1	0.7	8.52	37900	7.2	1.1 U
E-15	11/7/2012	0.5 U	0.3	0.2 U	1.0	0.2 U	3.6	0.1 U	1.0 U	2.9	8100	5.0 U	5.0 U
E-15	2/12/2013	0.5 U	11	0.4	24	2.4 J	2.9	0.1 U	3.3	21.8	14000	5.0 U	5.0 U
E-15	5/6/2013	0.5 U	1.7	0.2 U	5.0	1.3	1.8	0.1 U	1.0 U	2.9	2400	5.0 U	5.0 U
E-15	8/2/2013	0.5 U	0.5	0.2 U	3.4	0.5	5.1	0.1 U	1.0 U	3.6	13000	5.0 U	5.0 U
E-15	11/12/2013	0.5 U	0.4	0.2 U	1.7	0.3	2.4	0.1 U	1.1	2.2	9700	5.0 U	5.0 U
E-15	8/13/2014	0.5 U	0.5	0.2 U	2.4	0.2	2.5	0.10 U	2.0 J	155	13000	5.0 U	5.0 U
E-15	11/5/2014	0.5 U	0.2 U	0.2 U	1.7	0.3	5.4	0.10 U	1.6	2.2	20000	5.0 U	5.0 U
E-15	2/4/2015	0.5 U	0.8	0.2 U	3.3	0.6	1.8	0.10 U	3.2	2	9900	5.0 U	5.0 U
E-15	5/7/2015	0.5 U	3.1	0.2 U	7.6	1.6	5.6	0.10 U	2.4	1.7	15000	5.0 U	5.0 U
E-15	8/5/2015	0.5 U	4.6	0.2 U	7.9	1.8	5.6	0.10 U	2.1	41.9	15000	5.0 U	5.0 U
E-15	11/6/2015	0.5 U	0.9	0.2 U	7.3	1.4	5.2	0.10 U	2.9	1.0 U	14000	5.0 U	5.0 U
E-15	2/5/2016	0.5 U	3.0	0.2 U	8.3	2.2	5.6	0.1 U	2.6	1.3	15000	5.0 U	5.0 U
E-15	5/5/2016	0.5 U	0.4	0.2 U	5.2	0.9	5.5	0.10 U	2.2	1.0 U	15000	5.0 U	5.0 U
E-15	8/10/2016	0.5 U	0.2	0.2 U	1.3	0.2	1.3	0.10 U	1.3	1.7	10000	5.0 U	5.0 U
E-15	11/7/2016	0.5 U	0.2 U	0.2 U	0.6	0.2 U	0.9	0.10 U	1.1	3.3	13000	5.0 U	5.0 U
E-16	1/20/1999	340	620	19	130	95	2.0 U						
E-16	2/1/1999	290 J	430 J	22 J	100 J	120 J	2.0 U						
E-16	3/2/1999	360	390	16	75	90	2.0 U						
E-16	5/3/1999	170	320	12	98	32	3.0 U						
E-16	8/2/1999	49	140	5.5	42	14	1.0 U						
E-16	11/1/1999	150	160	7.8	45	26	1.0 U						
E-16	2/4/2000	33	120	4.4	14	9.0	1.0 U						
E-16	5/1/2000	38	97	5.1	34	11	1.0 U						
E-16	8/1/2000	14	59	2.7	28	4.2	1.0 U						
E-16	11/1/2000	8.2	41	2.3	28	2.9	1.0 U						
E-16	2/1/2001	38	120	7.2	53	12	1.0 U						
E-16	5/1/2001	40	120	6.8	46	13	1.0 U						
E-16	8/6/2001	40	100	6.9	46	11	1.0 U						
E-16	11/1/2001	36	110	6.0	39	11	1.0 U						
E-16	2/2/2002	20	77	5.2	28	7.0	1.0 U						
E-16	5/8/2002	15	57	3.4	23	5.7	1.0 U						
E-16	8/1/2002	17	64	4.8	24	5.1	1.0 U						
E-16	11/4/2002	5.8	66	4.9	35	3.3	1.0 U						
E-16	2/4/2003	2.0	17	1.4	6.8	1.1	1.0 U						
E-16	5/7/2003	1.6	17	1.1	6.5	1.0	1.0 U						
E-16	8/6/2003	2.2	39	3.2	16	1.2	1.0 U						
E-16	11/5/2003	3.4	51	3.7	22	2.0	1.0 U						
E-16	2/3/2004	4.8	38	3.7	13	3.1	1.0 U						
E-16	5/6/2004	1.0 U	38	2.9	16	1.0 U	1.0 U						
E-16	8/3/2004	1.0 U	44	3.6	18	1.1	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-16	11/1/2004	7.6	39	3.3	11	4.0	1.0 U						
E-16	2/3/2005	2.0	29	2.7	9.6	1.2	1.0 U						
E-16	5/3/2005	4.2	28	3.0	11	1.8	1.0 U						
E-16	8/2/2005	4.3	32	3.3	11	2.0	1.0 U						
E-16	12/16/2005	1.7	21	1.7	6.4	1.2	1.0 U						
E-16	2/6/2006	3.0	20	1.8	5.3	1.0 U	1.0 U						
E-16	5/9/2006	5.4	18	1.6	4.4	2.4	1.0 U						
E-16	8/8/2006	3.4	18	1.5	4.7	1.5	1.0 U						
E-16	11/9/2006	1.1	24	2.6	5.9	0.8	0.6 U						
E-16	2/6/2007	4.4	24	2.2	6.2	2.5	0.6 U						
E-16	5/10/2007	3.6	20	1.8	4.5	2.4	0.6 U						
E-16	8/8/2007	4.6	20	2.0	4.6	2.6	0.6 U						
E-16	11/7/2007	2.4	22	3.5	5.9	1.8	1.0 U						
E-16	2/12/2008	3.8	18	2.5	3.9	2.3	1.0 U						
E-16	5/12/2008	1.0 U	6.2	1.0 U	1.5	1.0 U	1.0 U						
E-16	8/8/2008	1.5	13	1.8	3.1	1.2	1.0 U						
E-16	11/5/2008	5.6	21	2.6	3.9	3.4	0.6 U						
E-16	2/3/2009	1.0 U	8.8	1.0 U	1.0 U	2.2	1.0 U						
E-16	5/7/2009	1.0 U	1.7	1.0 U	6.0	1.0 U	1.0 U	1.0 U	2.0	41.2	12200	1.2 U	1.1 U
E-16	8/18/2009	1.0 U	1.0 U	1.0 U	2.2	1.0 U	1.0 U	0.1 U	0.5	63.7	21900	1.2 U	1.1 U
E-16	11/5/2009	1.0 U	1.0 U	1.0 U	3.1	1.0 U	1.0 U	100 UJ	100 U	57.6			
E-16	2/2/2010	1.0 U	1.0 U	1.0 U	4.0	1.0 U	1.0 U						
E-16	5/5/2010	1.0 U	1.0 U	1.0 U	3.0	1.0 U	1.0 U	0.2	0.3	26.9	19400	1.2 U	1.1 U
E-16	8/9/2010	1.0 U	2.8	1.0 U	6.8	1.0 U	1.0 U	0.1 U	0.6	3.74	21900	1.2 U	1.1 U
E-16	11/15/2010	1.0 U	1.0 U	1.0 U	3.6	1.0 U	1.0 U	0.1	0.5	3.37			
E-16	1/31/2011	1.0 U	1.0 U	1.0 U	4.8	1.0 U	1.0 U	0.1 U	0.3	2.28	5080	1.2 U	1.1 U
E-16	5/2/2011	1.0 U	1.5	1.0 U	5.7	1.0 U	1.0 U	0.1	0.2	1.87	13100	1.2 U	1.1 U
E-16	8/2/2011	1.0 U	1.5	1.0 U	3.7	1.0 U	1.0 U	0.1 U	0.2	1.65	3080	1.2 U	1.1 U
E-16	10/31/2011	1.0 U	5.0	2.2	6.9	1.0 U	1.0 U	0.1 U	3.5	2.24	3680	1.2 U	1.1 U
E-16	2/7/2012	1.0 U	1.9	1.0 U	4.0	1.0 U	1.0 U	0.1	0.9	1.94	3980	1.2 U	1.1 U
E-16	5/7/2012	1.0 U	1.2	1.0 U	8.6	1.0 U	1.0 U	0.1 U	1.2	1.55	5740	1.2 U	1.1 U
E-16	8/8/2012	1.0 U	4.2	2.3	4.3	1.0 U	1.7	0.2	5.5	4.24	3280	1.2 U	1.1 U
E-16	11/7/2012	0.5 U	8.1	5.3	15	0.2 U	2.5	0.1 U	1.9	1.0 U	1700	5.0 U	5.0 U
E-16	2/12/2013	0.6	8.2	1.0	1.9	0.3 J	0.3	0.76	6.6	1.0 U	1300	5.0 U	5.0 U
E-16	5/7/2013	1.0	9.3	2.5	1.8	0.9	0.2 U	2.5	6.7	1.0 U	110	5.0 U	5.0 U
E-16	8/2/2013	0.6	12	2.6	1.5	0.4	0.2 U	2.0	6.6	1.1	5.0 U	5.0 U	5.0 U
E-16	11/12/2013	0.5 U	13	2.8	2.0	0.5	0.2 U	2.9	7.2	1.0 U	8.3	5.0 U	5.0 U
E-16	8/13/2014	0.5 U	13	3.0	2.4	0.6	0.2 U	2.8	7.9	1.7	13	5.0 U	5.0 U
E-16	11/5/2014	0.5 U	13	2.4	1.7	0.5	0.2 U	2.2	8.4	1.0 U	5.0	5.0 U	5.0 U
E-16	2/4/2015	0.5 U	9.8	2.1	1.3	0.2	0.2 U	2.4	7.2	1.0 U	5.0 U	5.0 U	5.0 U
E-16	5/7/2015	0.5 U	8.5	1.7	1.3	0.2	0.2 U	2.8	6.9	1.0 U	14	5.0 U	5.0 U
E-16	8/5/2015	0.5 U	9.6	2.1	1.5	0.2	0.2 U	2.6	7.0	1.0 U	24	5.0 U	5.0 U
E-16	11/6/2015	0.5 U	0.9	0.2 U	7.2	1.4	5.3	0.10 U	3.1	1.0 U	13000	5.0 U	5.0 U
E-16	2/26/2016	0.5 U	6.3	1.5	0.9	0.2	0.2 U	2.1	6.9	1.0 U	460	5.0 U	5.0 U
E-16	5/5/2016	0.5 U	7.7	2.3	1.2	0.3	0.2 U	3.5	7.0	1.0 U	23	5.0 U	5.0 U
E-16	8/10/2016	0.5 U	8.3	2.8	1.4	0.2	0.2 U	3.2	7.3	1.0 U	8.8	5.0 U	5.0 U
E-16	11/7/2016	0.5 U	8.8	2.3	1.2	0.3	0.2 U	2.9	7.0	1.3	11	5.0 U	5.0 U
Central Corrective Action Area Wells													
BOP-10(i)	3/2/1987	32	2600	130		23	2.4						
BOP-10(i)	12/9/1987	29	2200	89		16	2.0						
BOP-10(i)	7/14/1988	26	1600	110		14	3.9						
BOP-10(i)-Dup	7/14/1988	27	1700	110		14	3.6						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-10(i)	1/30/1989	6.6 M	1300	120		3.1 M	7.7 M						
BOP-10(i)	5/17/1989	3.7	1800	150		1.8	4.9						
BOP-10(i)	7/26/1989		2100	200									
BOP-10(i)	11/7/1989	4.1	1600	180	700	2.6	4.2						
BOP-10(i)	2/15/1990		1600	200	1100	3.1 M							
BOP-10(i)-Dup	2/15/1990	6.5	1700	190	1100	4.5	5.4						
BOP-10(i)	6/8/1990		2200	240	1100								
BOP-10(i)	8/7/1990	6.2	1800	110	1300	7.1	3.3 M						
BOP-10(i)	11/6/1990	25 U	1500	120	1100	25 U	75 U						
BOP-10(i)	2/7/1991	25 U	1500	120	1200	25 U	75 U						
BOP-10(i)	5/15/1991	7 M	1100	100	1000	7.7 J	20 U						
BOP-10(i)	8/9/1991	20 U	980	69	730	20 U	40 U						
BOP-10(i)-Dup	8/9/1991	8.6 M	1000	71	750	11	10 U						
BOP-10(i)	1/21/1992	5.0 U	700	49	470	10 U	15 U						
BOP-10(i)-Dup	1/21/1992	5.5	550	55	400	7.0	10 U						
BOP-10(i)	7/15/1992	20 U	640	43	430	20 U	40 U						
BOP-10(i)	2/17/1993	3.7 J	480 J	37 J	440 J	6.6 J	2.0 U						
BOP-10(i)	7/27/1993	2.8	440	33	340	3.7	2.0 U						
BOP-10(i)	3/2/1994	2.8 J	310 J	25 J	250 J	3.6 J	2.0 UJ						
BOP-10(i)	5/24/1994	2.5	330	23	240	3.2	2.0 U						
BOP-10(i)	8/10/1994	1.8	340	25	250	2.7	2.0 U						
BOP-10(i)	10/24/1994	2.6	440	16	240	3.8	2.0 U						
BOP-10(i)	8/18/1995	5.0 U	670	20	360	5.0 U	10 U						
BOP-10(i)	2/19/1996	5.0 U	840	16	410	5.0 U	10 U						
BOP-10(i)	8/5/1996	5.0 U	1300	28	670	5.0 U	10 U						
BOP-10(i)	2/18/1997	25 U	1900	46 J	960	25 U	50 U						
BOP-10(i)-Dup	2/18/1997	10 U	1800	36 J	960	10 U	20 U						
BOP-10(i)	8/21/1997	3.0 U	2900	62	1900	3.0 U	6.0 U						
BOP-10(i)	2/27/1998	23 U	2700	52	2100	23 U	45 U						
BOP-10(i)	8/24/1998	1.1	1500	49	1500	1.8	2.0 U						
BOP-10(i)	2/15/1999	1.0 U	1200	38	1300	1.0 U	2.0 U						
BOP-10(i)	8/20/1999	5.0 U	530	17	620	5.0 U	5.0 U						
BOP-10(i)	2/17/2000	1.0 U	530	22	640	1.0 U	1.0 U						
BOP-10(i)	8/29/2000	1.0 U	180	20	200	1.0 U	1.0 U						
BOP-10(i)	2/22/2001	1.0 U	120 J	24	90	1.0 U	1.0 U						
BOP-10(i)	8/15/2001	1.0 U	87	18	59	1.0 U	1.0 U						
BOP-10(i)	2/28/2002	1.0 U	59	14	27	1.0 U	1.0 U						
BOP-10(i)	8/16/2002	1.0 U	51	15	18	1.0 U	1.0 U						
BOP-10(i)	2/13/2003	1.0 U	40	15	11	1.0 U	1.0 U						
BOP-10(i)	8/12/2003	1.0 U	40	15	12	1.0 U	1.0 U						
BOP-10(i)	2/24/2004	1.0 U	33	11	7.8	1.0 U	1.0 U						
BOP-10(i)	8/12/2004	1.0 U	34	11	9.4	1.0 U	1.0 U						
BOP-10(i)	2/9/2005	1.0 U	34	10	8.1	1.0 U	1.0 U						
BOP-10(i)	8/8/2005	1.0 U	29	9.3	7.1	1.0 U	1.0 U						
BOP-10(i)	2/8/2006	1.0 U	38	12	8.4	1.0 U	1.0 U						
BOP-10(i)	8/7/2006	1.0 U	33	12	6.8	1.0 U	1.0 U						
BOP-10(i)	2/9/2007	1.0 U	37	15	7.3	1.0 U	1.0 U						
BOP-10(i)	8/16/2007	1.0 U	41	19	6.0	1.0 U	1.0 U						
BOP-10(i)	2/7/2008	1.0 U	72	60	11	1.0 U	1.0 U						
BOP-10(i)	8/11/2008	1.0 U	72	73	10	1.0 U	1.0 U						
BOP-10(i)-58	11/7/2008	0.5 U	91	91	8.9	0.5 U	0.5 U						
BOP-10(i)-64	11/7/2008	0.5 U	76	74	8.2	0.5 U	0.5 U						
BOP-10(i)-70	11/7/2008	0.5 U	80	65	11	0.5 U	0.5 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-10(i)-Dup-70	11/7/2008	0.5 U	80	66	10	0.5 U	0.5 U						
BOP-10(i)-76	11/7/2008	0.5 U	78	57	11	0.5 U	0.5 U						
BOP-10(i)	2/9/2009	1.0 U	120	120 J	16	1.0 U	1.0 U						
BOP-10(i)-Dup	2/9/2009	1.0 U	100	95 J	14	1.0 U	1.0 U						
BOP-10(i)	8/18/2009	1.0 U	98	110	16	1.0 U	1.0 U						
BOP-10(i)	2/3/2010	1.0 U	100	140	14	1.0 U	1.0 U						
BOP-10(i)	8/11/2010	1.0 U	87	130	15	1.0 U	1.0 U						
BOP-10(i)	2/7/2011	5.0 U	85	120	13	5.0 U	5.0 U						
BOP-10(i)	8/10/2011	1.0 U	61	85	9.7	1.0 U	1.0 U						
BOP-10(i)	2/2/2012	1.0 U	47	41	5.3	1.0 U	1.0 U						
BOP-10(i)	8/14/2012	1.0 U	30	26	3.5	1.0 U	1.0 U						
BOP-10(i)	2/4/2013	0.5 U	23	13	2.7	0.2 U	0.2 U						
BOP-10(i)	8/21/2013	0.5 U	16	6.5	2.0	0.2 U	0.2 U						
BOP-10(i)	8/5/2014	0.5 U	14	7.8	1.8	0.2 U	0.2 U						
BOP-10(i)	2/3/2015	0.5 U	13	8.0	1.8	0.2 U	0.2 U						
BOP-10(i)	8/5/2015	0.5 U	14	9.0	1.9	0.2 U	0.2 U						
BOP-10(i)	2/5/2016	0.5 U	13	7.2	1.6	0.2 U	0.2 U						
BOP-10(i)	8/8/2016	0.5 U	13	6.6	1.5	0.2 U	0.2 U						
BOP-56(i)	8/23/1994	9.8	170	54	47	11	2.0 U						
BOP-56(i)	11/4/1994	15	200	56	62	12	2.0 U						
BOP-56(i)	2/7/1995	15	200	50	47	12	2.0 U						
BOP-56(i)	5/23/1995	16	200	53	53	13	2.0 U						
BOP-56(i)	8/16/1995	9.5	180	38	50	10	2.0 U						
BOP-56(i)	2/9/1996	8.7	130	25	37	8.4	2.0 U						
BOP-56(i)	8/19/1996	4.3	160	37	52	6.7	2.0 U						
BOP-56(i)	2/25/1997	4.9	180	28	47	7.3	2.0 U						
BOP-56(i)	8/21/1997	2.0	150	29	46	4.3	2.0 U						
BOP-56(i)	3/7/1998	2.5	210	50	50	4.7	2.0 U						
BOP-56(i)	8/25/1998	2.7	170	51	50	3.5	2.0 U						
BOP-56(i)	2/18/1999	1.0 U	79	19	16	1.7	2.0 U						
BOP-56(i)	8/21/1999	1.0 U	70	19	13	1.4	1.0 U						
BOP-56(i)	2/23/2000	1.0 U	65	23	13	1.4	1.0 U						
BOP-56(i)	8/31/2000	1.0 U	37	7.4	9.2	1.0 U	1.0 U						
BOP-56(i)	2/24/2001	1.0 U	63	19	13	1.2	1.0 U						
BOP-56(i)	8/21/2001	1.0 U	17	3.5	4.0	1.0 U	1.0 U						
BOP-56(i)	3/7/2002	1.0 U	11	2.8	2.8	1.0 U	1.0 U						
BOP-56(i)	8/16/2002	1.0 U	18	5.7	4.3	1.0 U	1.0 U						
BOP-56(i)	2/24/2003	1.0 U	40	14	7.8	1.0 U	1.0 U						
BOP-56(i)	8/14/2003	1.0 U	46	15	9.5	1.0 U	1.0 U						
BOP-56(i)	2/27/2004	1.0 U	43	10	8.8	1.0 U	1.0 U						
BOP-56(i)	8/19/2004	1.0 U	35	6.4	8.1	1.0 U	1.0 U						
BOP-56(i)	2/16/2005	1.0 U	18	3.9	4.8	1.0 U	1.0 U						
BOP-56(i)	8/10/2005	1.0 U	42	9.8	8.5	1.0 U	1.0 U						
BOP-56(i)	2/9/2006	1.0 U	51	14	7.4	1.0 U	1.0 U						
BOP-56(i)	8/16/2006	1.0 U	34	7.0	6.4	1.0 U	1.0 U						
BOP-56(i)	2/9/2007	1.0 U	49	11	7.9	1.0 U	1.0 U						
BOP-56(i)	8/14/2007	1.0 U	42	8.5	5.9	1.0 U	1.0 U						
BOP-56(i)	2/7/2008	1.0 U	48	10	7.1	1.0 U	1.0 U						
BOP-56(i)	8/11/2008	1.0 U	40	9.8	5.6	1.0 U	1.0 U						
BOP-56(i)	2/10/2009	1.0 U	35	8.0	4.8	1.0 U	1.0 U						
BOP-56(i)	8/21/2009	1.0 U	31	6.3	4.8	1.0 U	1.0 U						
BOP-56(i)	2/3/2010	1.0 U	20	5.2	3.2	1.0 U	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-56(i)	8/12/2010	1.0 U	35	7.9	4.9	1.0 U	1.0 U						
BOP-56(i)	2/3/2011	1.0 U	17	4.7	2.5	1.0 U	1.0 U						
BOP-56(i)	8/12/2011	1.0 U	19	6.0	3.1	1.0 U	1.0 U						
BOP-56(i)	2/2/2012	1.0 U	17	5.1	2.6	1.0 U	1.0 U						
BOP-56(i)	8/9/2012	1.0 U	13	4.7	1.7	1.0 U	1.0 U						
BOP-56(i)	2/4/2013	0.5 U	23	2.8	3.9	0.3	0.2 U						
BOP-56(i)	8/21/2013	0.5 U	22	5.7	2.5	0.2	0.2 U						
BOP-56(i)	8/18/2014	0.5 U	23	3.7	2.9	0.3	0.2 U						
BOP-56(i)	2/3/2015	0.5 U	16	2.5	2.1	0.2 U	0.2 U						
BOP-56(i)	8/4/2015	0.5 U	16	3.7	1.7	0.2 U	0.2 U						
BOP-56(i)	2/1/2016	0.5 U	17	2.5	2.2	0.2 U	0.2 U						
BOP-56(i)	8/8/2016	0.5 U	11	3.9	1.2	0.2 U	0.2 U						
BOP-59(i)	8/26/1994	2.0 U	220	2.0 U	110	2.0 U	4.0 U						
BOP-59(i)	11/4/1994	3.0	400	11	170	2.2	2.0 U						
BOP-59(i)	2/24/1995	2.9	1200	26	510	2.8	2.2						
BOP-59(i)	5/23/1995	10 U	1800	29	880	10 U	20 U						
BOP-59(i)	8/8/1995	10 U	1200	25	590	10 U	20 U						
BOP-59(i)	2/13/1996	10 U	810	15	460	10 U	20 U						
BOP-59(i)	8/13/1996	10 U	1700	29	1100	10 U	20 U						
BOP-59(i)	2/18/1997	10 U	1400	23	1200	10 U	20 U						
BOP-59(i)	8/25/1997	15 U	1800	28	1800	15 U	30 U						
BOP-59(i)	3/9/1998	1.0 U	1600	30	1700	1.3	2.0 U						
BOP-59(i)	8/26/1998	1.0 U	72	1.2	74	1.0 U	2.0 U						
BOP-59(i)	2/17/1999	1.0 U	170	5.4	170	1.0 U	2.0 U						
BOP-59(i)-Dup	2/17/1999	1.0 U	200	5.3	170	1.0 U	2.0 U						
BOP-59(i)	8/24/1999	1.0 U	130	4.2	110	1.0 U	1.0 U						
BOP-59(i)-Dup	8/24/1999	1.0 U	120	4.0	110	1.0 U	1.0 U						
BOP-59(i)	2/17/2000	1.0 U	80	3.2	56	1.0 U	1.0 U						
BOP-59(i)-Dup	2/17/2000	1.0 U	83	3.3	58	1.0 U	1.0 U						
BOP-59(i)	8/30/2000	1.0 U	91	2.6	80	1.0 U	1.0 U						
BOP-59(i)-Dup	8/30/2000	1.0 U	83	2.4	75	1.0 U	1.0 U						
BOP-59(i)	2/21/2001	1.0 U	88 J	3.1	120	1.0 U	2.8						
BOP-59(i)-Dup	2/21/2001	1.0 UJ	83 J	3.1 J	110 J	1.0 UJ	3.3 J						
BOP-59(i)	8/21/2001	1.0 U	54	2.0	75	1.0 U	1.3						
BOP-59(i)-Dup	8/21/2001	1.0 U	59	2.1	82	1.0 U	1.5						
BOP-59(i)	2/24/2002	1.0 U	47	1.9	51	1.0 U	1.0 U						
BOP-59(i)-Dup	2/24/2002	1.0 U	48	1.9	52	1.0 U	1.0 U						
BOP-59(i)	8/16/2002	1.0 U	29	1.4	26	1.0 U	1.0 U						
BOP-59(i)-Dup	8/16/2002	1.0 U	34	1.6	27	1.0 U	1.0 U						
BOP-59(i)	2/17/2003	1.0 U	38	5.9	31	1.0 U	1.0 U						
BOP-59(i)-Dup	2/17/2003	1.0 U	38	6.0	32	1.0 U	1.0 U						
BOP-59(i)	8/15/2003	1.0 U	30	14	13	1.0 U	1.0 U						
BOP-59(i)-Dup	8/15/2003	1.0 U	30	14	13	1.0 U	1.0 U						
BOP-59(i)	2/24/2004	1.0 U	30	9.3	9.6	1.0 U	1.0 U						
BOP-59(i)-Dup	2/24/2004	1.0 U	32	10	11	1.0 U	1.0 U						
BOP-59(i)	8/12/2004	1.0 U	29	8.7	11	1.0 U	1.0 U						
BOP-59(i)-Dup	8/12/2004	1.0 U	28	7.7	9.5	1.0 U	1.0 U						
BOP-59(i)	2/11/2005	1.0 U	30	14	8.1	1.0 U	1.0 U						
BOP-59(i)-Dup	2/11/2005	1.0 U	30	14	8.6	1.0 U	1.0 U						
BOP-59(i)	8/9/2005	1.0 U	36	24	10	1.0 U	1.0 U						
BOP-59(i)-Dup	8/9/2005	1.0 U	36	25	11	1.0 U	1.0 U						
BOP-59(i)	2/8/2006	1.0 U	29	10	10	1.0 U	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-59(i)-Dup	2/8/2006	1.0 U	27	9.8	10	1.0 U	1.0 U						
BOP-59(i)	8/7/2006	1.0 U	35	15	12	1.0 U	1.0 U						
BOP-59(i)-Dup	8/7/2006	1.0 U	35	13	12	1.0 U	1.0 U						
BOP-59(i)	2/9/2007	1.0 U	31	11	13	1.0 U	1.0 U						
BOP-59(i)-Dup	2/9/2007	1.0 U	31	11	13	1.0 U	1.0 U						
BOP-59(i)	8/8/2007	0.2 U	18	1.8	16	0.3	0.2 U						
BOP-59(i)-Dup	8/8/2007	0.2 U	18	2.2	16	0.3	0.2 U						
BOP-59(i)	2/7/2008	1.0 U	18	1.6	18	1.0 U	1.0 U						
BOP-59(i)-Dup	2/7/2008	1.0 U	18	1.6	17	1.0 U	1.0 U						
BOP-59(i)	8/11/2008	1.0 U	18	1.1	24	1.0 U	1.0 U						
BOP-59(i)-Dup	8/11/2008	1.0 U	18	1.3	24	1.0 U	1.0 U						
BOP-59(i)	2/9/2009	1.0 U	18	1.2	24	1.0 U	1.0 U						
BOP-59(i)-Dup	2/9/2009	1.0 U	15	1.0	21	1.0 U	1.0 U						
BOP-59(i)	8/19/2009	1.0 U	19	1.2	21	1.0 U	1.0 U						
BOP-59(i)-Dup	8/19/2009	1.0 U	19	1.2	20	1.0 U	1.0 U						
BOP-59(i)	2/3/2010	1.0 U	26	1.5	23	1.0 U	1.0 U						
BOP-59(i)	8/11/2010	1.0 U	23	1.1	20	1.0 U	1.0 U						
BOP-59(i)-Dup	8/11/2010	1.0 U	22	1.1	21	1.0 U	1.0 U						
BOP-59(i)	2/7/2011	1.0 U	20	1.7	18	1.0 U	1.0 U						
BOP-59(i)-Dup	2/7/2011	1.0 U	20	1.6	18	1.0 U	1.0 U						
BOP-59(i)	8/10/2011	1.0 U	16	3.9	15	1.0 U	1.0 U						
BOP-59(i)-Dup	8/10/2011	1.0 U	16	3.8	15	1.0 U	1.0 U						
BOP-59(i)	2/2/2012	1.0 U	24	26	20	1.0 U	1.0 U						
BOP-59(i)-Dup	2/2/2012	1.0 U	23	26	19	1.0 U	1.0 U						
BOP-59(i)	8/7/2012	1.0 U	24	22	12	1.0 U	1.0 U						
BOP-59(i)-Dup	8/7/2012	1.0 U	22	18	13	1.0 U	1.0 U						
BOP-59(i)	2/12/2013	0.5 U	11	4.2	6.8	0.2 U	0.2 U						
BOP-59i-Dup	2/12/2013	0.5 U	12	4.4	6.7	0.2 U	0.2 U						
BOP-59(i)	8/7/2013	0.5 U	7.1	0.2 U	3.6	0.2 U	0.2 U						
BOP-59i-Dup	8/7/2013	0.5 U	7.0	0.2 U	3.4	0.2 U	0.2 U						
BOP-59(i)	8/5/2014	0.5 U	9.4	5.5	2.3	0.2 U	0.2 U						
BOP-59i-Dup	8/5/2014	0.5 U	9.3	5.4	2.3	0.2 U	0.2 U						
BOP-59(i)	2/3/2015	0.5 U	4.2	0.2 U	6.1	0.2 U	0.2 U						
BOP-59i-Dup	2/3/2015	0.5 U	4.3	0.2 U	6.4	0.2 U	0.2 U						
BOP-59(i)	8/4/2015	0.5 U	7.0	7.0	2.5	0.2 U	0.2 U						
BOP-59i-Dup	8/4/2015	0.5 U	7.7	7.6	2.7	0.2 U	0.2 U						
BOP-59(i)	2/5/2016	0.5 U	4.5	0.3	3.3	0.2 U	0.2 U						
BOP-59i-Dup	8/8/2016	0.5 U	5.4	1.9	1.3	0.2 U	0.2 U						
BOP-59(i)	8/8/2016	0.5 U	5.7	2.0	1.4	0.2 U	0.2 U						
BOP-59i-Dup	2/5/2016	0.5 U	4.5	0.3	3.3	0.2 U	0.2 U						
E-6	3/28/1989	21 J	3900	150	3400	12 J	7.7 J						
E-6	4/6/1989	16 J	3700	150	3700								
E-6	4/12/1989	25 U	3900	180	3700								
E-6	4/18/1989	25 U	3800	150	3100								
E-6	4/25/1989	25 U	4200	150	3900	180							
E-6	5/2/1989	25 U	4300	200	4200								
E-6	5/9/1989	25 U	3900	170	3100								
E-6	5/16/1989	25 U	4500	210	4200								
E-6	5/23/1989	25 U	3900	190	3100								
E-6	5/30/1989	25 U	3900	180	4000								
E-6	6/7/1989	25 U	3800	170	3000								
E-6	6/13/1989	11 M	4100	200	3500								

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-6	6/20/1989	25 U	4200	180	3900								
E-6	6/27/1989	25 U	4300	180	3000								
E-6	7/5/1989	8.9 M	4600	170	3500								
E-6	7/11/1989	25 U	4200	180	3700								
E-6	7/18/1989	25 U	4300	170	3800								
E-6	7/25/1989	25 U	5000	180	4100								
E-6	8/1/1989	63 U	5100	220	3700 J								
E-6	8/8/1989	13 M	3700	180	4400	7.6 J							
E-6	8/15/1989	12 M	5200	230	5300	7.1 J							
E-6	8/22/1989	50 U	4300	200	4800								
E-6	8/29/1989	33 U	4400	200	4600								
E-6	9/5/1989	14 M	5300	210	5400								
E-6	9/12/1989	13	5700	200	7100	9.6	6.8						
E-6	11/15/1989	14 J	3900	150	3500	9.1 J							
E-6	11/21/1989	20 J	4500	170	3500	12 J							
E-6	11/28/1989	22 J	5300	170	3800	9.5 J							
E-6	12/5/1989	23 M	6700	200	4400	12 J							
E-6	12/12/1989	20 M	6400	190	4600								
E-6	12/19/1989	22 J	6800	230	6000	12 J							
E-6	1/4/1990	25 J	6900	210	5600								
E-6	1/17/1990	59	7100	230	4900	17 J							
E-6	1/31/1990	25 M	5500	200	4100	10 J							
E-6	2/14/1990	24 J	5800	190	4500	11 M							
E-6	2/28/1990	21 M	5800	200	3900	11 M							
E-6	3/14/1990	33 U	7400	290	4200	11 M							
E-6	3/28/1990	33 U	7400	240	4600								
E-6	4/11/1990	25 U	8100	210	4200								
E-6	4/25/1990	33 U	6800	170	3700								
E-6	5/8/1990	33 U	6900	210	4500								
E-6	5/22/1990	33 U	7700	220	4200	97							
E-6	6/6/1990	33 U	8400	220	4800	100							
E-6	6/19/1990	33 U	8200	210	4500								
E-6	7/3/1990	33 U	7000	210	4700								
E-6	7/17/1990	33 U	7700	200	5000								
E-6	7/31/1990	50 U	7100	190	4700								
E-6	8/14/1990	15	6600 B	160	4700	16	5.8						
E-6	8/28/1990	50 U	5700	130	3800								
E-6	9/11/1990	50 U	5000	130	3400								
E-6	9/27/1990	19 M	5800	180	4000	15 M							
E-6	10/9/1990	50 U	5600	140	3800								
E-6	10/29/1990	50 U	6800	170	4200								
E-6	11/14/1990	50 U	5500	160	3100								
E-6	11/28/1990	50 U	5100	140	3500								
E-6	12/11/1990	50 U	4400	110	2900								
E-6	1/2/1991	50 U	4700	130	3000	50 U	150 U						
E-6	1/15/1991	50 U	4500	120	3100	50 U	150 U						
E-6	2/5/1991	50 U	4700	120	3500	50 U	150 U						
E-6	3/5/1991	50 U	4000	130	2000	50 U	150 U						
E-6	4/2/1991	50 U	3300	85	2400	50 U	100 U						
E-6	5/7/1991	100 U	3800	110	2600	50 U	100 U						
E-6	6/3/1991	50 U	4000	100	2800	52	100 U						
E-6	7/1/1991	50 U	4500	120	3000	50 U	100 U						
E-6	8/5/1991	50 U	3700	100	2500	50 U	100 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-6	9/3/1991	25 U	4100	110	2600	50 U	75 U						
E-6	10/2/1991	50 U	3300	110	2400	50 U	100 U						
E-6	11/4/1991	25 U	2500	74	1700	25 U	50 U						
E-6	12/4/1991	25 U	1800	59	1200	25 U	50 U						
E-6	1/6/1992	25 U	2200	76	1500	25 U	50 U						
E-6	2/4/1992	25 U	2200	70	1600	25 U	50 U						
E-6	3/3/1992	25 U	1800	51	1200	25 U	50 U						
E-6	4/6/1992	25 U	2100	80	1400	25 U	50 U						
E-6	5/4/1992	25 U	1700	50	1100	25 U	50 U						
E-6	6/2/1992	25 U	1700	56	1100	25 U	50 U						
E-6	7/6/1992	25 U	1700	51	1200	25 U	50 U						
E-6	8/10/1992	25 U	1900	62	1100	25 U	50 U						
E-6	9/1/1992	50 U	2000	62	1200	50 U	100 U						
E-6	10/1/1992	50 U	1500	46 J	870	50 U	100 U						
E-6	11/2/1992	50 U	1400	38 J	950	50 U	100 U						
E-6	12/1/1992	5.3 M	990	32	650	6.4 M	20 U						
E-6	1/1/1993	8 M	1000	36	680	10 U	20 U						
E-6	2/1/1993	10 U	1500	46	920	10 U	20 U						
E-6	3/3/1993	20 U	1310	38	790	20 U	40 U						
E-6	3/29/1993	20 U	750	20 M	500	20 U	40 U						
E-6	4/28/1993	18 U	740	20	370	18 U	36 U						
E-6	5/25/1993	20 U	750	22	420	20 U	40 U						
E-6	6/23/1993	10 U	600	20	390	10 U	20 U						
E-6	7/30/1993	10 U	740	25	430	10 U	20 U						
E-6	8/25/1993	10 U	740	25	430	10 U	20 U						
E-6	9/29/1993	10 U	630	22	350	10 U	20 U						
E-6	10/27/1993	5.0 U	580	20	340	5.0 U	10 U						
E-6	11/22/1993	5.0 U	600	20	340	5.0 U	10 U						
E-6	12/27/1993	6.2	600	20	320	5.0 U	10 U						
E-6	1/26/1994	2.0 U	190	6.1	110	2.0 U	4.0 U						
E-6	2/23/1994	3.9	470	18	320	4.3	4.0 U						
E-6	4/4/1994	5.0 U	500	15	280	5.0 U	10 U						
E-6	4/26/1994	5.0 U	440	13	260	5.0 U	10 U						
E-6	6/29/1994	5.0 U	480	17	280	5.0 U	10 U						
E-6	10/26/1994	2.4	470	16	250	2.8	2.0 U						
E-6	3/3/1995	2.6 J	390 J	12	190	3.0	2.0 U						
E-6	6/1/1995	2.9	440	13	200	2.9	2.0 U						
E-6	8/29/1995	5.0 U	680	16	300	5.0 U	10 U						
E-6	11/9/1995	5.0 U	740	16	320	6.1	10 U						
E-6	3/4/1996	5.0 U	750	18	340	5.0 U	10 U						
E-6	5/31/1996	5.0 U	930	17	420	5.0 U	10 U						
E-6	8/26/1996	5.0 U	1000	19	530	5.0 U	10 U						
E-6	11/20/1996	5.0 U	1100	18	530	5.0 U	10 U						
E-6	3/6/1997	5.0 U	980	24	830	5.0 U	10 U						
E-6	5/27/1997	10 U	1300	22	810	10 U	20 U						
E-6	9/2/1997	9.0 U	1500	29	1200	9.0 U	18 U						
E-6	11/3/1997	1.7	1400	36	1000	2.4	2.0 U						
E-6	2/24/1998	10 U	1200	19	1100	10 U	20 U						
E-6	5/5/1998	1.3 J	1300	28	1100	2.2	2.0 U						
E-6	8/3/1998	1.0	980	20	800	1.9	2.0 U						
E-6	11/2/1998	1.0 U	1100	27	890	1.8	2.0 U						
E-6	2/1/1999	1.0 U	1100	23	980	1.7	2.0 U						
E-6	5/3/1999	1.0 U	1100	17	1100	1.3	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-6	8/2/1999	3.0 U	660	12	680	3.0 U	3.0 U						
E-6	11/1/1999	5.0 U	430	8.3	450	5.0 U	5.0 U						
E-6	2/4/2000	1.0 U	420	8.3	420	1.1	1.0 U						
E-6	5/1/2000	1.0 U	320	8.2	400	1.1	1.0 U						
E-6	8/2/2000	1.0 U	250	8.6	250	1.0	1.0 U						
E-6	11/1/2000	1.0 U	250	15	300	1.0 U	1.0 U						
E-6	2/1/2001	3.0 U	310 J	13	330	3.0 U	3.0 U						
E-6	5/1/2001	1.0 U	270	14	380	1.2	1.0 U						
E-6	8/6/2001	5.0 U	280	14	380	5.0 U	5.0 U						
E-6	11/1/2001	3.0 U	220	12	300	3.0 U	3.0 U						
E-6	2/2/2002	3.0 U	190	14	240	3.0 U	3.0 U						
E-6	5/8/2002	1.0 U	130	12	160	1.0 U	1.0 U						
E-6	8/1/2002	3.0 U	110	13	140	3.0 U	3.0 U						
E-6	11/4/2002	1.0 U	100	16	99	1.0 U	1.0 U						
E-6	12/4/2002	1.0 U	95	14	94	1.0 U	1.0 U						
E-6	2/4/2003	1.0 U	69	16	44	1.0 U	1.0 U						
E-6	5/7/2003	1.0 U	54	14	28	1.0 U	1.0 U						
E-6	8/6/2003	1.0 U	52	16	20	1.0 U	1.0 U						
E-6	11/5/2003	1.0 U	59	12	24	1.0 U	1.0 U						
E-6	2/3/2004	1.0 U	45	12	20	1.0 U	1.0 U						
E-6	5/6/2004	1.0 U	39	9.5	16	1.0 U	1.0 U						
E-6	8/3/2004	1.0 U	46	12	14	1.0 U	1.0 U						
E-6	11/1/2004	1.0 U	46	12	15	1.0 U	1.0 U						
E-6	2/3/2005	1.0 U	33	8.8	10	1.0 U	1.0 U						
E-6	5/3/2005	1.0 U	29	9.0	8.3	1.0 U	1.0 U						
E-6	8/2/2005	1.0 U	28	9.2	7.9	1.0 U	1.0 U						
E-6	12/16/2005	1.0 U	71	62	12	1.0 U	1.0 U						
E-6	2/6/2006	1.0 U	22	7.6	4.9	1.0 U	1.0 U						
E-6	5/9/2006	1.0 U	24	10	5.6	1.0 U	1.0 U						
E-6	8/8/2006	1.0 U	38	18	7.9	1.0 U	1.0 U						
E-6	11/9/2006	0.2 U	44	26	11	0.2	0.2 U						
E-6	2/6/2007	0.2 U	41	34	10	0.2	0.2 U						
E-6	5/10/2007	1.0 U	62	54	12	1.0 U	1.0 U						
E-6	8/8/2007	1.0 U	60	59	9.8	1.0 U	1.0 U						
E-6	11/8/2007	1.0 U	44	57	8.2	1.0 U	1.0 U						
E-6	2/11/2008	1.0 U	31	30	5.9	1.0 U	1.0 U						
E-6	5/12/2008	1.0 U	19	32	3.9	1.0 U	1.0 U						
E-6	8/11/2008	1.0 U	17	26	3.8	1.0 U	1.0 U						
E-6	11/6/2008	0.2 U	41	40	15	0.2 U	0.2 U						
E-6	2/12/2009	1.0 U	25	28	11	1.0 U	1.0 U						
E-6	8/6/2009	1.0 U	27	28	12	1.0 U	1.0 U						
E-6	8/6/2010	1.0 U	17	10	3.4	1.0 U	1.0 U						
E-6	8/3/2011	1.0 U	16	17	7.4	1.0 U	1.0 U						
E-6	8/8/2012	1.0 U	15	16	6.0	1.0 U	1.0 U						
E-6	8/2/2013	0.5 U	19	21	8.5	0.2	0.2 U						
E-6	8/12/2014	0.5 U	17	17	8.2	0.2	0.2 U						
E-6	8/5/2015	0.5 U	22	22	3.5	0.2 U	0.2 U						
E-6	8/18/2016	0.5 U	13	7.0	2.8	0.2 U	0.2 U						
E-7	3/28/1989	9.4	590	49	590	6.0	6.4 M						
E-7	4/6/1989	9.3	1100	86	1100	4.8 J	8.7						
E-7	4/12/1989		2100	160	1900								
E-7	4/18/1989		2500	150	2000								

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-7	4/25/1989		3300	170	3000								
E-7	5/2/1989		3400	160	2900								
E-7	5/9/1989		3700	190	2900								
E-7	5/16/1989		4200	220	3600								
E-7	5/23/1989		3900	240	3000								
E-7	5/30/1989		3900	220	3700								
E-7	6/7/1989		4000	220	3100								
E-7	6/13/1989	12 M	3700	210	3000	7.2 M							
E-7	6/20/1989		3700	190	3200								
E-7	6/27/1989	8.6 M	2800	160	2000								
E-7	7/5/1989	11 M	3100	160	2400								
E-7	7/11/1989	12 J	3000	170	2600								
E-7	7/18/1989	12 M	2600	160	2500								
E-7	7/25/1989	10 M	2700	150	2300								
E-7	8/1/1989	9.3	2700	180	2300								
E-7	8/8/1989	16 J	2000	140	2500	11 J							
E-7	8/15/1989	15 J	2400	180	2800	8 J							
E-7	8/22/1989	15 J	2300	160	3000	9.3 J							
E-7	8/29/1989	20	2500	190	2900	10 J							
E-7	9/5/1989	18 J	2500	160	2900	11 J							
E-7	9/12/1989	16	3400	160	2000	11	8.4						
E-7	11/15/1989	9.3 J	2100	100	2200								
E-7	11/21/1989	16 J	2900	150	2700	8 J							
E-7	11/28/1989	13 J	1700	99	1400	7.6							
E-7	12/5/1989	13 J	2100	130	2000	7 J							
E-7	12/12/1989	13 J	1900	120	1800	6.6 J							
E-7	12/19/1989	11 J	2200	120	2000								
E-7	1/4/1990	13 M	2700	150	3000								
E-7	1/17/1990	15 J	2000	130	1800	7.6 J							
E-7	1/31/1990		1500	99	1400								
E-7	2/14/1990	13 J	1400	92	1300								
E-7	2/28/1990	12 M	1400	140	1100								
E-7	3/14/1990		1600	120	1100								
E-7	3/28/1990		2000	95	1500								
E-7	4/11/1990		1500	100	970								
E-7	4/25/1990		2100	170	1200								
E-7	5/8/1990		1700	140	1200								
E-7	5/22/1990		2400	130	1600								
E-7	6/6/1990		2200	160	1400								
E-7	6/19/1990		1600	100	1000								
E-7	7/3/1990		1400	100	1100								
E-7	7/17/1990		1300	87	930								
E-7	7/31/1990		2600	140	1800								
E-7	8/14/1990	9.4	2500 B	110	1900	9.7	5.8						
E-7	8/28/1990	8.0	1500	86	960	8.1	4.1 M						
E-7	9/10/1990		2100	110	1600								
E-7	9/27/1990		5800	150	3800								
E-7	10/9/1990		1500	99	1000								
E-7	10/29/1990		1700	100	1100								
E-7	11/14/1990		1600	110	1000								
E-7	11/28/1990		2100	120	1600								
E-7	12/11/1990		1500	95	1100								
E-7	1/2/1991	20 U	2000	110	1500	20 U	60 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-7	1/15/1991	11	820	71	620	9.8 J	30 U						
E-7	2/5/1991	10	1600	89	1300	11	30 U						
E-7	3/5/1991	9.3 M	1100	74	600	5.7 M	30 U						
E-7	4/2/1991	9.7 J	1100	84	820	7.7 M	20 U						
E-7	5/7/1991	10 U	900	75	650	6.8 M	20 U						
E-7	6/3/1991	8.4 J	950	67	720	12	20 U						
E-7	7/1/1991	7.4 M	2000	110	1500	10 U	20 U						
E-7	8/5/1991	6.2 J	910	60	710	7.6 J	20 U						
E-7	9/3/1991	6.1 M	1100	69	710	20 U	30 U						
E-7	10/2/1991	6.3 J	790	64	650	10 U	20 U						
E-7	11/4/1991	7 M	870	62	650	5.5	10 U						
E-7	12/4/1991	5.8	800	60	570	5.5	10 U						
E-7	1/6/1992	6.3	1300	92	970	7.0	9.4 J						
E-7	2/4/1992	7.0	550	51	410	4.6 J	10 U						
E-7	3/3/1992	4.7 M	710	49	530	6.1	4.1 M						
E-7	4/6/1992	7.5	810	86	700	4.8 J	10 U						
E-7	5/4/1992	3.7 J	680	60	520	4.5 J	10 U						
E-7	6/2/1992	4.1 J	800	57	640	5.0	10 U						
E-7	7/6/1992	3.5 M	950	54	700	3.5 M	10 U						
E-7	8/10/1992	10 U	1400	88	1000	10 U	20 U						
E-7	9/1/1992	50 U	1200	84	820	50 U	100 U						
E-7	10/1/1992	10 U	950	62	610	10 U	20 U						
E-7	11/2/1992	20 U	1900	68	1400	20 U	40 U						
E-7	12/1/1992	50 U	2900	190	2200	50 U	100 U						
E-7	1/1/1993	3 M	680	50	570	4.8 J	10 U						
E-7	2/1/1993	5.1	1300	61	1100	5.2	10 U						
E-7	3/3/1993	4.8 J	1300	50	950	6.5	10 U						
E-7	3/29/1993	10 U	610	29	490	10 U	20 U						
E-7	4/28/1993	10 U	970	43	770	10 U	20 U						
E-7	5/25/1993	10 U	870	52	680	10 U	20 U						
E-7	6/23/1993	10 U	310	22	250	10 U	20 U						
E-7	7/30/1993	10 U	520	31	380	10 U	20 U						
E-7	8/25/1993	10 U	960	46	850	10 U	20 U						
E-7	9/29/1993	10 U	500	27	420	10 U	20 U						
E-7	10/27/1993	5.0 U	920	60	960	5.0 U	10 U						
E-7	11/22/1993	10 U	880	64	840	10 U	20 U						
E-7	12/27/1993	5.0 U	220	12	150	5.0 U	10 U						
E-7	1/26/1994	10 U	920	52	670	10 U	20 U						
E-7	2/23/1994	10 U	410	22	290	10 U	20 U						
E-7	4/4/1994	10 U	1200	51	720	10 U	20 U						
E-7	4/26/1994	5.0 U	1200	46	680	5.0 U	10 U						
E-7	6/29/1994	10 U	940	43	580	10 U	20 U						
E-7	10/26/1994	1.0 U	39	4.7	18	1.0 U	2.0 U						
E-7	12/21/1994	1.9	650	32	410	1.3	2.0 U						
E-7	3/3/1995	1.0 UJ	640 J	30 J	350 J	1.0 UJ	2.0 UJ						
E-7	6/1/1995	1.1	700	37	480	1.2	2.0 U						
E-7	8/29/1995	10 U	760	41	560	10 U	20 U						
E-7	11/9/1995	10 U	540	27	440	10 U	20 U						
E-7	3/4/1996	10 U	380	28	280	10 U	20 U						
E-7	5/31/1996	10 U	380	28	370	10 U	20 U						
E-7	8/26/1996	1.0 U	180	25	160	1.0 U	2.0 U						
E-7	11/20/1996	2.0 U	240	25	240	2.0 U	4.0 U						
E-7	3/6/1997	1.0 U	160	24	180	1.0 U	2.0 U						

APPENDIX D-1
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-7	5/27/1997	1.0 U	100	20	110	1.0 U	2.0 U						
E-7	9/2/1997	1.0 U	120	30	120	1.0 U	2.0 U						
E-7	11/3/1997	1.0 U	83	25	66	1.0 U	2.0 U						
E-7	2/24/1998	1.0 U	70	21	61	1.0 U	2.0 U						
E-7	5/5/1998	1.0 U	77	22	71	1.0 U	2.0 U						
E-7	8/3/1998	1.0 U	81	18	67	1.0 U	2.0 U						
E-7	11/2/1998	1.0 U	100	24	55	1.0 U	2.0 U						
E-7	2/1/1999	1.0 U	220	33	190	1.0 U	2.0 U						
E-7	5/3/1999	1.0 U	240	24	150	2.6	1.0 U						
E-7	8/2/1999	1.0 U	440	65	460	1.0 U	1.0 U						
E-7	11/1/1999	1.0 U	150	20	140	1.0 U	1.0 U						
E-7	2/4/2000	1.0 U	47	11	40	1.0 U	1.0 U						
E-7	5/1/2000	1.0 U	85	32	47	1.0 U	1.0 U						
E-7	8/2/2000	1.0 U	100	25	52	1.6	1.0 U						
E-7	11/1/2000	1.0 U	48	32	11	1.0 U	1.0 U						
E-7	2/1/2001	1.0 U	61	34	13	1.0 U	1.0 U						
E-7	5/1/2001	1.0 U	52	27	20	1.0 U	1.0 U						
E-7	8/6/2001	1.0 U	82	42	17	1.0 U	1.0 U						
E-7	11/1/2001	1.0 U	88	49	12	1.0 U	1.0 U						
E-7	2/2/2002	1.0 U	100	26	17	2.0	1.0 U						
E-7	5/8/2002	1.0 U	72	38	11	1.0 U	1.0 U						
E-7	8/1/2002	1.0 U	78	25	14	1.4	1.0 U						
E-7	11/4/2002	1.0 U	53	41	8.1	1.0 U	1.0 U						
E-7	12/4/2002	1.0 U	77	20	16	1.4	1.0 U						
E-7	2/4/2003	1.0 U	34	28	5.8	1.0 U	1.0 U						
E-7	5/7/2003	1.0 U	25	12	4.9	1.0 U	1.0 U						
E-7	8/6/2003	1.0 U	20	8.4	3.2	1.0 U	1.0 U						
E-7	11/5/2003	1.0 U	34	8.0	5.7	1.0 U	1.0 U						
E-7	2/3/2004	1.0 U	21	9.5	3.1	1.0 U	1.0 U						
E-7	5/6/2004	1.0 U	22	8.6	3.1	1.0 U	1.0 U						
E-7	8/3/2004	1.0 U	43	7.7	8.7	1.0 U	1.0 U						
E-7	11/1/2004	1.0 U	22	6.2	5.3	1.0 U	1.0 U						
E-7	2/3/2005	1.0 U	67	8.5	13	1.1	1.0 U						
E-7	5/3/2005	1.0 U	32	16	6.2	1.0 U	1.0 U						
E-7	8/2/2005	1.0 U	49	34	7.3	1.0 U	1.0 U						
E-7	12/16/2005	1.0 U	88	92	16	1.0 U	1.0 U						
E-7	2/6/2006	1.0 U	160	180	22	1.0 U	1.0 U						
E-7	5/9/2006	1.0 U	83	100	13	1.0 U	1.0 U						
E-7	8/8/2006	1.0 U	80	97	12	1.0 U	1.0 U						
E-7	11/9/2006	0.2 U	79	120	16	0.2 U	0.2 U						
E-7	2/6/2007	0.2 U	62	100	15	0.2 U	0.2 U						
E-7	5/10/2007	1.0 U	53	77	10	1.0 U	1.0 U						
E-7	8/16/2007	1.0 U	140	200	22	1.0 U	1.0 U						
E-7	11/8/2007	1.0 U	100	180	14	1.0 U	1.0 U						
E-7	2/11/2008	1.0 U	140	250	22	1.0 U	1.0 U						
E-7	5/12/2008	1.0 U	28	51	11	1.0 U	1.0 U						
E-7	8/11/2008	1.0 U	18	62	11	1.0 U	1.0 U						
E-7	11/4/2008	3.0 U	150	300	26	3.0 U	3.0 U						
E-7	2/3/2009	1.0 U	21	34	17	1.0 U	1.0 U						
E-7	8/6/2009	1.0 U	77	120	33	1.0 U	1.0 U						
E-7	8/6/2010	5.0 U	39	120	12	5.0 U	5.0 U						
E-7	8/3/2011	1.0 U	11	38	5.0	1.0 U	1.0 U						
E-7	8/8/2012	1.0 U	29	62	33	1.0 U	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-7	8/2/2013	0.5 U	38	23	35	1.1	0.2 U						
E-7	8/12/2014	0.5 U	19	0.2 U	8.6	0.3	0.2 U						
E-7	8/12/2015	0.5 U	23	75	7.7	0.2 U	0.2 UJ						
E-7	8/12/2016	0.5 U	14	37	13	0.2 U	0.2 U						
DP-1	10/28/1998	1.0 U	1000	20	850	1.2	2.0 U						
DP-1	2/4/2000	1.0 U	120	4.1	94	1.0 U	1.0 U						
DP-1	5/1/2000	1.0 U	160	4.5	190	1.0 U	1.0 U						
DP-1	8/1/2000	1.0 U	200	4.4	220	1.0 U	1.0 U						
DP-1	11/1/2000	5.0 U	220	5 J	350	5.0 U	5.0 U						
DP-1	2/1/2001	1.0 U	380 J	7.5	450	1 J	2.0						
DP-1	5/1/2001	5.0 U	380	8.0	460	5.0 U	5.0 U						
DP-1	8/6/2001	5.0 U	230	5.7	290	5.0 U	5.0 U						
DP-1	11/1/2001	3.0 U	200	4.4	240	3.0 U	3.0 U						
DP-1	2/2/2002	5.0 U	160	5.0 U	180	5.0 U	5.0 U						
DP-1	5/8/2002	3.0 U	170	4.5	210	3.0 U	3.0 U						
DP-1	8/1/2002	1.0 U	130	3.8	160	1.0 U	1.0 U						
DP-1	11/4/2002	1.0 U	100	3.4	120	1.0 U	1.0 U						
DP-1	2/4/2003	1.0 U	93	3.7	120	1.0 U	1.0 U						
DP-1	5/7/2003	1.0 U	87	11	110	1.0 U	1.0 U						
DP-1	8/6/2003	1.0 U	81	23	96	1.0 U	1.0 U						
DP-1	11/5/2003	1.0 U	75	18	100	1.0 U	1.0 U						
DP-1	2/3/2004	1.0 U	60	18	71	1.0 U	1.0 U						
DP-1	5/6/2004	1.0 U	54	12	64	1.0 U	1.0 U						
DP-1	8/3/2004	1.0 U	58	12	66	1.0 U	1.0 U						
DP-1	11/1/2004	1.0 U	57	12	67	1.0 U	1.0 U						
DP-1	2/3/2005	1.0 U	53	12	61	1.0 U	1.0 U						
DP-1	5/3/2005	1.0 U	55	13	78	1.0 U	1.0 U						
DP-1	8/2/2005	1.0 U	57	14	82	1.0 U	1.0 U						
DP-1	12/16/2005	1.0 U	52	10	76	1.0 U	1.0 U						
DP-1	2/6/2006	1.0 U	54	7.4	82	1.0 U	1.0 U						
DP-1	5/9/2006	1.0 U	51	5.9	88	1.0 U	1.0 U						
DP-1	8/8/2006	1.0 U	48	6.1	70	1.0 U	1.0 U						
DP-1	11/9/2006	0.2 U	44	6.3	70	0.5	0.8						
DP-1	2/6/2007	0.2 U	49	5.8	84	0.3	0.9						
DP-1	5/10/2007	1.0 U	61	4.3	120	1.0 U	1.0 U						
DP-1	8/8/2007	0.2 U	6.4	0.3	1.4	0.2 U	0.2 U						
DP-1	11/7/2007	0.2 U	8.0	0.3	1.9	0.2 U	0.2 U						
DP-1	2/11/2008	1.0 U	43	1.9	86	1.0 U	3.7						
DP-1	5/12/2008	1.0 U	46	2.2	110	1.0 U	1.2						
DP-1	8/11/2008	1.0 U	47	2.1	110	1.0 U	1.0 U						
DP-1	11/5/2008	1.0 U	49	2.2	130	1.0 U	1.0 U						
DP-1	2/3/2009	1.0 U	40	1.0 U	98	1.0 U	1.0 U						
DP-1	8/6/2009	1.0 U	34	1.6	94	1.0 U	1.0 U						
DP-1	2/2/2010	1.0 U	33	1.8	87	1.0 U	1.0						
DP-1	8/9/2010	5.0 U	36	5.0 U	95	5.0 U	5.0 U						
DP-1	2/3/2011	1.0 U	31	2.2	81	1.0 U	1.0 U						
DP-1	8/3/2011	1.0 U	30	4.0	93	1.0 U	1.0 U						
DP-1	2/3/2012	1.0 U	28	21	48	1.0 U	1.0 U						
DP-1	8/8/2012	1.0 U	23	17	30	1.0 U	1.0 U						
DP-1	11/7/2012	0.5 U	25	20	60	0.3	0.2 U						
DP-1	2/4/2013	0.5 U	32	23	110	0.4	0.2 U						
DP-1	5/9/2013	0.5 U	34	24	120	0.4	0.2 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
DP-1	8/7/2013	0.5 U	30	20	110	0.3	0.2 U						
DP-1	11/12/2013	0.5 U	31	20	98	0.4	0.2 U						
DP-1	8/12/2014	0.5 U	24	21	68	0.4	0.2 U						
DP-1	11/5/2014	0.5 U	18	16	57	0.4	0.2 U						
DP-1	2/5/2015	0.5 U	32	20	99	0.3	0.2 U						
DP-1	5/7/2015	0.5 U	35	19	120	0.3	0.2 U						
DP-1	8/4/2015	0.5 U	34	14	120	0.2 U	0.2 U						
DP-1	11/6/2015	0.5 U	28	14	97	0.2	0.2 U						
DP-1	2/5/2016	0.5 U	22	13	74	0.3	0.2 U						
DP-1	5/3/2016	0.5 U	24	16	88	0.2	0.2 U						
DP-1	8/10/2016	0.5 U	21	11	74	0.2	0.2 U						
DP-1	11/7/2016	0.5 U	26	17	87	0.3	0.2 U						
East Yard Corrective Action Area Wells													
BOP-48(i)	3/3/1994	7.7	16	1.0 U	1.0 U	9.3	2.0 U						
BOP-48(i)	5/31/1994	11 J	38 J	1.0 U	1.6 J	15 J	2.0 U						
BOP-48(i)	7/25/1994	6.4 J	29 J	0.2 UJ	1.1 J	5.6 J	0.2 UJ						
BOP-48(i)	10/28/1994	8.0	34	1.0 U	1.7	9.6	2.0 U						
BOP-48(i)	2/16/1995	4.2	10	0.2 U	0.45	1.7	0.2 U						
BOP-48(i)	8/8/1995	4.1	21	1.0 U	1.0 U	6.4	2.0 U						
BOP-48(i)	2/7/1996	1.8	9.1	1.0 U	1.0 U	2.6	2.0 U						
BOP-48(i)	8/13/1996	1.8	9.9	1.0 U	1.0 U	2.7	2.0 U						
BOP-48(i)	2/17/1997	1.3	5.9	1.0 U	1.0 U	1.8	2.0 U						
BOP-48(i)	8/21/1997	1.2	12	1.0 U	1.0 U	1.3	2.0 U						
BOP-48(i)	3/2/1998	1.0 U	5.8	1.0 U	1.0 U	1.6	2.0 U						
BOP-48(i)	8/26/1998	1.0 U	12	1.0 U	1.0 U	2.2	2.0 U						
BOP-48(i)	2/18/1999	1.0 U	4.4	1.0 U	1.0 U	1.0 U	2.0 U						
BOP-48(i)	8/24/1999	1.0 U	9.4	1.0 U	1.0 U	1.8	1.0 U						
BOP-48(i)	2/23/2000	1.0 U	9.1	1.0 U	1.0 U	1.8	1.0 U						
BOP-48(i)	8/31/2000	1.0 U	10	1.0 U	1.0 U	1.6	1.0 U						
BOP-48(i)	2/23/2001	1.0 U	6.6	1.0 U	1.0 U	1.8	1.0 U						
BOP-48(i)	8/16/2001	1.0 U	8.2	1.0 U	1.0 U	1.5	1.0 U						
BOP-48(i)	2/28/2002	1.0 U	4.9	1.0 U	1.0 U	1.2	1.0 U						
BOP-48(i)	8/16/2002	1.0 U	5.3	1.0 U	1.0 U	1.4	1.0 U						
BOP-48(i)	2/21/2003	1.0 U	2.5	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/15/2003	1.0 U	8.1	1.0 U	1.0 U	1.7	1.0 U						
BOP-48(i)	3/2/2004	1.0 U	3.6	1.0 U	1.0 U	1.2	1.0 U						
BOP-48(i)	8/19/2004	1.0 U	6.6	1.0 U	1.0 U	1.1	1.0 U						
BOP-48(i)	2/16/2005	1.0 U	5.6	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/6/2005	1.0 U	5.2	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	2/9/2006	1.0 U	3.0	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/7/2006	1.0 U	2.7	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	2/9/2007	1.0 U	1.7	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/8/2007	0.2 U	2.2	0.2 U	0.2 U	0.3	0.2 U						
BOP-48(i)	2/21/2008	0.2 U	2.1	0.2 U	0.2 U	0.4	0.2 U	2.02	6.2	1.5 U			
BOP-48(i)	8/12/2008	1.0 U	1.3	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	2/9/2009	1.0 U	1.6	1.0 U	1.0 U	1.0 U	1.0 U	1.7	6.4	1.5 U			
BOP-48(i)	8/19/2009	1.0 U	1.8	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/15/2010	1.0 U	1.8	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/12/2011	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/14/2012	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-48(i)	8/21/2013	0.5 U	0.5	0.2 U	0.2 U	0.2 U	0.2 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-48(i)	8/5/2014	0.5 U	0.4	0.2 U	0.2 U	0.2 U	0.2 U						
BOP-48(i)	8/5/2015	0.5 U	0.8	0.2 U	0.2 U	0.2 U	0.2 U						
BOP-48(i)	8/8/2016	0.5 U	0.9	0.2 U	0.2 U	0.2 U	0.2 U						
E-9	3/28/1989	210	56	1.1	12	25							
E-9	4/6/1989	250	49	1.0 U	13	28							
E-9	4/12/1989	190	64		12	26							
E-9	4/18/1989	180	75		13	28							
E-9	4/25/1989	170	71		16	29							
E-9	5/2/1989	170	68		13	28							
E-9	5/9/1989	140	63		11	25							
E-9	5/16/1989	170	70		14	31							
E-9	5/23/1989	140	64		11	26							
E-9	5/30/1989	150	65		13	28							
E-9	6/7/1989	140	62		9.8	27							
E-9	6/13/1989	150	73	3.9	14	32							
E-9	6/20/1989	130	60	2.9	11	28							
E-9	6/27/1989	110	52	2.4	7.4	22							
E-9	7/5/1989	110	43	1.6	6.5	19							
E-9	7/11/1989	110	39	1.2	7.0	19							
E-9	7/18/1989	95	37	1.1	5.9	20							
E-9	7/25/1989	130	51	1.7	7.4	27							
E-9	8/1/1989	96	36	0.9	5.4	20							
E-9	8/8/1989	81	31	0.8	5.7	17							
E-9	8/15/1989	97	31	0.9	8.8	18							
E-9	8/22/1989	73	27	0.7	5.9	14							
E-9	8/29/1989	69	25	3.2	5.5	12							
E-9	9/5/1989	47	34	0.7 M	4.3	13							
E-9	12/19/1989	110	33	0.4 M	3.8	9.3							
E-9	1/4/1990	73	50	1.1	5.3	18							
E-9	1/17/1990	67	62	1.8	6.0	20							
E-9	1/31/1990	60	61	1.8	6.3	20							
E-9	2/14/1990	62	68	3.6	8.4	21							
E-9	2/28/1990	73	77	3.4	8.2	18							
E-9	3/14/1990	35	49	1.1	2.8	15							
E-9	3/28/1990	68	49		4.4	21							
E-9	4/11/1990	63	66	1.2	4.3	26							
E-9	4/25/1990	79	78	2.7	6.2	26							
E-9	5/8/1990	75	76	2.6	6.9	33							
E-9	5/22/1990	82	68	1.9	5.9	30							
E-9	6/6/1990	67	76	2.5	5.2	31							
E-9	6/19/1990	58	64	1.9	4.8	23							
E-9	7/3/1990	62	59	1.3	4.9	26							
E-9	7/17/1990	61	47	1.2	4.2	25							
E-9	7/31/1990	64	46	0.9 M	3.6	28							
E-9	8/14/1990	64	70	1.9 M		33							
E-9	8/28/1990	63	65	1.7	5.3	32							
E-9	9/11/1990	52	56	1.4	4.3	27							
E-9	9/27/1990	55	37	0.7 M	3.8	22							
E-9	10/9/1990	56	51	0.7 M	3.7	29							
E-9	10/29/1990	56	37	0.7 J	3.8	24							
E-9	11/14/1990	63	40	0.5 M	3.0	24							
E-9	11/28/1990	79	30		4.5	21							

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-9	12/11/1990	77	25		3.1	18							
E-9	1/2/1991	66	39	0.7 M	3.8	24	3.0 U						
E-9	1/15/1991	65	36	0.6 J	3.6	24	3.0 U						
E-9	2/5/1991	97	31	0.5 M	4.0	24	3.0 U						
E-9	3/5/1991	62	55	2.0	3.6	27	3.0 U						
E-9	4/2/1991	57	71	2.6	6.2	28	3.0 U						
E-9	5/7/1991	88	39	0.9 J	3.2	24	2.0 U						
E-9	6/3/1991	64	55	2.0	4.0	25	2.0 U						
E-9	7/1/1991	55	47	1.7	3.0	25	2.0 U						
E-9	8/5/1991	50	57	2.3	3.8	28	2.0 U						
E-9	9/3/1991	48	50	1.9	3.8	24	3.0 U						
E-9	10/2/1991	47	32	0.7 J	2.5	14	2.0 U						
E-9	11/4/1991	45	39	0.8 M	3.0	14	2.0 U						
E-9	12/4/1991	43	59	1.2	2.8	20	3.0 U						
E-9	1/6/1992	50	37	0.9 J	2.8	17	2.0 U						
E-9	2/4/1992	38	50	1.4	3.4	24	2.0 U						
E-9	3/3/1992	32	55	2.0	4.0	19	2.0 U						
E-9	4/6/1992	41	50	1.6	3.4	21	2.0 U						
E-9	5/4/1992	53	24	1.0 U	2.4	14	2.0 U						
E-9	6/2/1992	34	48	1.7	3.4	17	2.0 U						
E-9	7/6/1992	32	38	0.9 M	2.1	17	2.0 U						
E-9	8/10/1992	36	39	1.0 U	2.3	18	2.0 U						
E-9	9/1/1992	34	36	1.0 U	2.2	16	2.0 U						
E-9	10/1/1992	33	32	1.0 U	2.1	13	2.0 U						
E-9	11/2/1992	35	23	1.0 U	1.9	14	2.0 U						
E-9	12/1/1992	34	29	1.0 U	1.9	16	2.0 U						
E-9	1/1/1993	37	36	0.8 J	2.0	16	2.0 U						
E-9	2/1/1993	40	40	0.8 J	1.9	14	2.0 U						
E-9	3/3/1993	43	52	0.9 J	2.5	18	2.0 U						
E-9	3/29/1993	30	42	0.7 M	1.8	14	2.0 U						
E-9	4/28/1993	28	43	1.0	2.2	15	2.0 U						
E-9	5/25/1993	28	42	1.2	2.3	16	2.0 U						
E-9	6/23/1993	21	23	1.0 U	1.6	7.4	2.0 U						
E-9	7/30/1993	24	31	0.8 J	1.3	11	2.0 U						
E-9	8/25/1993	25	29	1.0 U	1.4	10	2.0 U						
E-9	9/29/1993	24	33	0.8 J	1.8	13	2.0 U						
E-9	10/27/1993	19	28	1.0 U	1.3	11	2.0 U						
E-9	11/22/1993	15	26	1.0 U	1.2	9.1	2.0 U						
E-9	12/27/1993	15	30	1.0 U	1.4	10	2.0 U						
E-9	1/26/1994	9.3	22	1.0 U	1.0 U	5.9	2.0 U						
E-9	2/23/1994	14	34	1.0 U	1.8	10	2.0 U						
E-9	4/4/1994	14	36	1.0 U	1.7	9.4	2.0 U						
E-9	4/26/1994	14 J	32	1.0 U	1.6	8.9	2.0 U						
E-9	10/26/1994	29	6.6	1.0 U	1.2	2.1	2.0 U						
E-9	12/21/1994	22	22	1.0 U	1.3	7.8	2.0 U						
E-9	3/3/1995	20 J	22	1.0 U	1.0	6.9	2.0 U						
E-9	6/1/1995	31	22	1.0 U	1.3	7.1	2.0 U						
E-9	8/29/1995	12	25	1.0 U	1.1	8.4	2.0 U						
E-9	11/9/1995	6.0	23	1.0 U	1.2	8.4	2.0 U						
E-9	3/4/1996	24	20	1.0 U	1.0	6.4	2.0 U						
E-9	5/31/1996	9.4	21	1.0 U	1.0 U	5.4	2.0 U						
E-9	8/26/1996	6.0	21	1.0 U	1.0 U	6.6	2.0 U						
E-9	11/20/1996	3.7	24	1.0 U	1.0 U	6.7	2.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-9	3/6/1997	15	19	1.0 U	1.2	5.3	2.0 U						
E-9	5/27/1997	12	17	1.0 U	1.0	3.9	2.0 U						
E-9	9/2/1997	2.4	9.2	1.0 U	2.8	1.5	2.0 U						
E-9	5/5/1998	2.6 J	18	1.0 U	1.0 U	3.8	2.0 U						
E-9	8/3/1998	9.7	3.1	1.0 U	1.0 U	1.0 U	2.0 U						
E-9	11/2/1998	3.5	13	1.0 U	1.0 U	2.1	2.0 U						
E-9	2/1/1999	2.0	19	1.0 U	1.0 U	3.9	2.0 U						
E-9	5/3/1999	7.2	5.3	1.0 U	1.0 U	11	1.0 U						
E-9	8/2/1999	5.0	5.5	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	11/1/1999	1.1	9.5	1.0 U	1.0 U	1.6	1.0 U						
E-9	2/4/2000	1.6	15	1.0 U	1.0 U	2.8	1.0 U						
E-9	5/1/2000	1.6	14	1.0 U	1.0 U	2.6	1.0 U						
E-9	8/2/2000	1.4	13	1.0 U	1.0 U	2.6	1.0 U						
E-9	11/1/2000	1.0 U	9.6	1.0 U	1.0 U	1.5	1.0 U						
E-9	2/1/2001	1.0 U	11	1.0 U	1.0 U	2.1	1.0 U						
E-9	5/1/2001	1.0 U	11	1.0 U	1.0 U	2.1	1.0 U						
E-9	8/6/2001	1.0 U	7.7	1.0 U	1.0 U	1.2	1.0 U						
E-9	11/1/2001	1.0 U	6.2	1.0 U	1.0 U	1.0	1.0 U						
E-9	2/24/2002	1.3	10	1.0 U	1.0 U	2.2	1.0 U						
E-9	5/8/2002	1.0 U	10	1.0 U	1.0 U	1.6	1.0 U						
E-9	8/1/2002	1.0 U	6.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	11/4/2002	1.0	6.9	1.0 U	1.0 U	1.2	1.0 U						
E-9	12/4/2002	1.3	3.9	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	2/6/2003	1.1	1.8	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	5/7/2003	1.0 U	2.7	1.0 U	1.1	1.0 U	8.0						
E-9	8/13/2003	1.0 U	2.2	1.0 U	2.3	1.0 U	10						
E-9	11/5/2003	1.0 U	2.5	1.0 U	1.0 U	1.0 U	5.8 J						
E-9	2/3/2004	1.0 U	2.0	1.0 U	1.0 U	1.0 U	3.8						
E-9	5/6/2004	1.0 U	2.6	1.0 U	1.0 U	1.0 U	5.9						
E-9	8/3/2004	1.0 U	1.2	1.0 U	1.0 U	1.0 U	3.0						
E-9	11/1/2004	1.0 U	2.6	1.0 U	1.1	1.0 U	9.3						
E-9	2/3/2005	1.0 U	1.6	1.0 U	1.0 U	1.0 U	7.9						
E-9	5/3/2005	1.0 U	1.8	1.0 U	1.0 U	1.0 U	3.1						
E-9	8/2/2005	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	15						
E-9	12/16/2005	1.0 U	7.7	1.0 U	1.4	1.0 U	1.0 U						
E-9	2/6/2006	2.1	2.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	5/9/2006	1.0 U	20	1.6	2.8	1.0 U	1.0 U						
E-9	8/8/2006	10	47	2.1	9.1	2.2	1.0 U						
E-9	11/9/2006	0.2 U	3.4	0.6	0.3	0.2 U	0.5						
E-9	2/6/2007	0.2 U	2.8	0.4	0.3	0.2 U	0.3						
E-9	5/10/2007	9.2	45	3.4	10	6.8	0.2						
E-9	8/22/2007	1.4	5.4	0.9	1.0	0.6 U	2.7						
E-9	11/8/2007	0.2 U	2.1	0.4	0.3	0.2 U	1.0						
E-9	2/12/2008	1.0 U	4.4	1.0 U	1.0 U	1.0 U	1.9						
E-9	5/12/2008	1.0 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	8/11/2008	1.0 U	3.7	1.0 U	1.0 U	1.0 U	2.1						
E-9	11/5/2008	0.7	1.3	0.2 U	0.2 U	0.2 U	0.2 U						
E-9	2/3/2009	1.0 U	4.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	8/6/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	8/6/2010	1.0 U	1.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	8/3/2011	1.0 U	2.0	1.0 U	1.0 U	1.0 U	1.5						
E-9	8/8/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
E-9	8/2/2013	0.5 U	0.4	0.4	0.2 U	0.2 U	0.6						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-9	8/14/2014	0.5 U	0.5	0.5	0.2 U	0.2 U	0.7						
E-9	8/13/2015	0.5 U	0.7	0.3	0.2 U	0.2 U	0.2 U						
E-9	8/12/2016	0.5 U	0.6	0.3	0.2 U	0.2 U	0.2 U						
East Corrective Action Area Wells													
E-8	3/28/1989	47	140	57	150	25							
E-8	4/6/1989	44	140	75	150	24							
E-8	4/12/1989	50	140	58	160	26							
E-8	4/18/1989	45	140	78	130	26							
E-8	4/25/1989	43	130	67	130	26							
E-8	5/2/1989	50	130	72	120	32							
E-8	5/9/1989	43	120	57	99	26							
E-8	5/16/1989	60	130	44	120	36							
E-8	5/23/1989	50	110	61	88	30							
E-8	5/30/1989	60	100	53	100	37							
E-8	6/7/1989	61	110	56	89	35							
E-8	6/13/1989	58	115	57	100	40							
E-8	6/20/1989	56	100	49	93	36							
E-8	6/27/1989	48	100	49	67	32							
E-8	7/5/1989	57	93	45	73	33							
E-8	7/11/1989	60	91	45	80	35							
E-8	7/18/1989	61	99	47	77	41							
E-8	7/25/1989	62	94	44	80	37							
E-8	8/1/1989	59	91	42	73	40							
E-8	8/8/1989	66	79	42	98	38							
E-8	8/15/1989	71	98	56	110	46							
E-8	8/22/1989	65	77	39	98	39							
E-8	8/29/1989	51	70	32	79	31							
E-8	9/5/1989	74	100	45	110	48							
E-8	9/12/1989	69	96	59	130	44							
E-8	11/15/1989	34	100	25	76	24							
E-8	11/21/1989	53	94	28	73	33							
E-8	11/28/1989	50	81	27	64	34							
E-8	12/5/1989	55	85	30	71	35							
E-8	12/12/1989	51	84	25	69	31							
E-8	12/19/1989	57	86	28	75	36							
E-8	1/4/1990	50	82	26	75	29							
E-8	1/17/1990	64	94	30	73	41							
E-8	1/31/1990	47	85	26	57	29							
E-8	2/14/1990	50	60	28	55	33							
E-8	2/28/1990	56	67	24	51	26							
E-8	3/14/1990	50	71	24	45	49							
E-8	3/28/1990	42	66	22	46	38							
E-8	4/11/1990	44	70	21	45	41							
E-8	4/25/1990	43	62	20	41	39							
E-8	5/8/1990	45	68	21	46	46							
E-8	5/22/1990	45	77	22	44	45							
E-8	6/6/1990	46	62	19	39	48							
E-8	6/19/1990	34	70	17	35	34							
E-8	7/3/1990	38	61	17	43	36							
E-8	7/17/1990	37	54	15	36	42							
E-8	7/31/1990	40	58	16	36	48							

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-8	8/14/1990	38	62	17	38	41							
E-8	8/28/1990	35	54	13	34	43							
E-8	9/11/1990	37	57	14	36	46							
E-8	9/27/1990	34	55	13	34	39							
E-8	10/9/1990	39	47	14	34	50							
E-8	10/29/1990	35	55	13	30	43							
E-8	11/14/1990	38	56	14	27	45							
E-8	11/28/1990	38	62	13	33	40							
E-8	12/11/1990	36	58	14	30	43							
E-8	1/2/1991	31	73	14	27	40	3.0 U						
E-8	1/15/1991	28	51	12	26	39	3.0 U						
E-8	2/5/1991	30	60	12	29	41	3.0 U						
E-8	3/5/1991	27	39	10	16	34	3.0 U						
E-8	4/2/1991	27	43	13	24	38	3.0 U						
E-8	5/7/1991	24	48	12	20	34	2.0 U						
E-8	6/3/1991	23	45	12	20	34	2.0 U						
E-8	7/1/1991	21	39	11	16	31	2.0 U						
E-8	8/5/1991	23	42	12	17	32	2.0 U						
E-8	9/3/1991	20	37	11	17	19	3.0 U						
E-8	10/2/1991	18	42	10	16	16	2.0 U						
E-8	11/4/1991	19	52	12	17	16	2.0 U						
E-8	12/4/1991	14	140	14	19	19	3.0 U						
E-8	1/6/1992	16	54	12	15	23	2.0 U						
E-8	2/4/1992	15	40	10	12	19	2.0 U						
E-8	3/3/1992	12	36	8.8	11	16	2.0 U						
E-8	4/6/1992	14	40	12	15	18	2.0 U						
E-8	5/4/1992	11	40	9.8	14	15	2.0 U						
E-8	6/2/1992	11	35	11	13	16	2.0 U						
E-8	7/6/1992	12	54	11	13	14	2.0 U						
E-8	8/10/1992	12	52	12	16	17	2.0 U						
E-8	9/1/1992	10	47	11	13	13	2.0 U						
E-8	10/1/1992	11	38	11	12	14	2.0 U						
E-8	11/2/1992	9.8	28	8.6	12	15	2.0 U						
E-8	12/1/1992	10	30	9.4	11	15	2.0 U						
E-8	1/1/1993	8.2	37	9.1	11	13	2.0 U						
E-8	2/1/1993	7.9	35	8.7	10	11	2.0 U						
E-8	3/3/1993	8.4	52	10	12	12	2.0 U						
E-8	3/29/1993	6.2	34	7.1	9.0	10	2.0 U						
E-8	4/28/1993	5.4	31	7.8	9.1	8.3	2.0 U						
E-8	5/25/1993	5.8	39	8.1	10	10	2.0 U						
E-8	6/23/1993	5.1	45	9.4	9.9	7.2	2.0 U						
E-8	7/30/1993	4.2	33	8.5	8.3	7.0	2.0 U						
E-8	8/25/1993	4.9	44	9.5	9.8	8.1	2.0 U						
E-8	9/29/1993	4.5	47	8.4	9.0	7.2	2.0 U						
E-8	10/27/1993	4.7	42	8.4	9.1	7.2	2.0 U						
E-8	11/22/1993	4.0	38	8.2	8.5	6.8	2.0 U						
E-8	12/27/1993	4.6	39	9.4	9.7	7.0	2.0 U						
E-8	1/26/1994	2.8	27	7.2	6.7	4.7	2.0 U						
E-8	2/23/1994	3.3	39	9.1	8.9	6.3	2.0 U						
E-8	4/4/1994	3.1	41	8.9	8.0	5.0	2.0 U						
E-8	4/26/1994	2.5 J	20	6.6	6.2	4.1	2.0 U						
E-8	6/29/1994	3.1	45	8.2	8.4	5.7	2.0 U						
E-8	10/26/1994	1.6	20	6.7	6.6	2.1	2.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-8	12/21/1994	2.2	29	8.5	7.3	3.5	2.0 U						
E-8	3/3/1995	2.2 J	31 J	7.8 J	6.5 J	3.4 J	2.0 UJ						
E-8	6/1/1995	1.8	47	9.2	7.2	3.0	2.0 U						
E-8	8/29/1995	2.2	67	10	9.1	4.2	2.0 U						
E-8	11/9/1995	1.2	36	6.8	6.9	4.0	2.0 U						
E-8	3/4/1996	1.0 U	39	11	6.0	2.0	2.0 U						
E-8	5/31/1996	1.0 U	54	12	7.9	2.6	2.0 U						
E-8	8/26/1996	1.0 U	30	13	7.3	1.1	2.0 U						
E-8	11/20/1996	1.0 U	43	14	7.4	1.8	2.0 U						
E-8	3/6/1997	1.0 U	33	13	6.9	1.1	2.0 U						
E-8	5/27/1997	1.0 U	100	15	12	3.7	2.0 U						
E-8	9/2/1997	1.0 U	82	19	12	2.5	2.0 U						
E-8	11/3/1997	1.0 U	71	18	11	2.1	2.0 U						
E-8	2/24/1998	1.0 U	34	12	6.2	1.2	2.0 U						
E-8	5/5/1998	1.0 U	36	12	5.9	1.6	2.0 U						
E-8	8/3/1998	1.0 U	41	11	6.5	2.2	2.0 U						
E-8	11/23/1998	1.0 U	15	4.6	5.9	1.7	2.0 U						
E-8	2/1/1999	1.0 U	110	10	11	1.6	2.0 U						
E-8	5/3/1999	1.0 U	120	9.6	11	3.6	1.0 U						
E-8	8/2/1999	1.0 U	66	8.5	6.9	2.4	1.0 U						
E-8	11/1/1999	1.0 U	41	6.0	4.7	1.9	1.0 U						
E-8	2/4/2000	1.0 U	83	5.6	9.4	3.3	1.0 U						
E-8	5/1/2000	1.0 U	69	6.4	6.5	3.2	1.0 U						
E-8	8/2/2000	1.0 U	120	7.2	9.4	4.5	1.0 U						
E-8	11/1/2000	1.0 U	9.1	2.5	1.2	1.0 U	1.0 U						
E-8	2/1/2001	1.0 U	30	4.4	4.3	1.9	1.0 U						
E-8	5/1/2001	1.0 U	120	8.0	12	5.4	1.0 U						
E-8	8/6/2001	1.0 U	19	3.1	2.9	1.3	1.0 U						
E-8	11/1/2001	1.0 U	23	3.5	2.0	1.4	1.0 U						
E-8	2/2/2002	1.0 U	110	6.8	9.4	5.3	1.0 U						
E-8	5/8/2002	1.0 U	14	3.8	2.2	1.4	1.0 U						
E-8	8/1/2002	1.0 U	110	7.3	11	4.6	1.0 U						
E-8	11/4/2002	1.0 U	33	4.7	4.3	1.0 U	1.0 U						
E-8	12/4/2002	1.0 U	53	4.6	6.1	2.0	1.0 U						
E-8	2/4/2003	1.0 U	6.6	2.2	1.3	1.0 U	1.0 U						
E-8	5/7/2003	1.0 U	8.0	2.2	1.5	1.0 U	1.0 U						
E-8	8/6/2003	1.0 U	10	2.1	1.8	1.0 U	1.0 U						
E-8	11/5/2003	1.0 U	6.6	1.6	1.3	1.0 U	1.0 U						
E-8	2/3/2004	1.0 U	5.4	2.5	1.1	1.0 U	1.0 U						
E-8	5/6/2004	1.0 U	8.2	2.2	1.4	1.0 U	1.0 U						
E-8	8/3/2004	1.0 U	8.8	1.5	1.6	1.0 U	1.0 U						
E-8	11/1/2004	1.0 U	12	2.1	1.9	1.0 U	1.0 U						
E-8	2/3/2005	1.0 U	12	2.1	2.1	1.0 U	1.0 U						
E-8	5/3/2005	1.0 U	7.7	2.6	1.5	1.0 U	1.0 U						
E-8	8/2/2005	1.0 U	9.1	3.3	1.9	1.0 U	1.0 U						
E-8	12/16/2005	1.0 U	12	3.3	2.4	1.0 U	1.0 U						
E-8	2/6/2006	1.0 U	15	3.9	2.4	1.0 U	1.0 U						
E-8	5/9/2006	1.0 U	12	4.1	2.4	1.0 U	1.0 U						
E-8	8/8/2006	1.0 U	8.2	1.8	1.6	1.0 U	1.0 U						
E-8	11/9/2006	0.2 U	1.5	1.2	0.2	0.2 U	0.2 U						
E-8	2/6/2007	0.2 U	9.4	4.5	1.5	0.2	0.2 U						
E-8	5/10/2007	0.2 U	10	4.6	1.7	0.2	0.2 U						
E-8	8/8/2007	0.2 U	11	4.9	1.8	0.5	0.2 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-8	11/8/2007	0.2 U	13	5.4	2.3	0.7	0.2 U						
E-8	2/11/2008	1.0 U	8.8	5.0	1.6	1.0 U	1.0 U						
E-8	5/12/2008	1.0 U	8.5	5.0	1.4	1.0 U	1.0 U						
E-8	8/11/2008	1.0 U	6.2	3.7	1.4	1.0 U	1.0 U						
E-8	11/5/2008	0.2 U	12	5.6	2.5	0.7	0.2 U						
E-8	2/12/2009	1.0 U	11	5.6	2.1	1.0 U	1.0 U						
E-8	8/6/2009	1.0 U	10	4.7	1.9	1.0 U	1.0 U						
E-8	8/6/2010	1.0 U	7.5	4.0	1.5	1.0 U	1.0 U						
E-8	8/3/2011	1.0 U	7.4	4.5	1.2	1.0 U	1.0 U						
E-8	8/8/2012	1.0 U	6.4	3.5	1.0 U	1.0 U	1.0 U						
E-8	8/2/2013	0.5 U	5.3	2.7	1.7	0.2 U	0.2 U						
E-8	8/14/2014	0.5 U	7.0	5.3	1.0	0.3	0.2 U						
E-8	8/13/2015	0.5 U	7.0	6.1	0.8	0.2 U	0.2 UJ						
E-8	8/12/2016	0.5 U	2.3	3.0	0.3	0.2 U	0.2 U						
Southwest Corrective Action Area Wells													
BOP-9(i)	3/4/1987	30	830	22		6.2							
BOP-9(i)	5/20/1987	29	996	23		4.3							
BOP-9(i)	5/27/1987	20	575	15		3.4 J							
BOP-9(i)	5/29/1987	7.5	299	3.5		0.8 M							
BOP-9(i)	6/1/1987	14	471	10		23 U							
BOP-9(i)	6/3/1987	18	510	11		23 U							
BOP-9(i)	6/10/1987	15 M	600	9.4 J		45 U							
BOP-9(i)	6/17/1987	15	470	12		2.7 J							
BOP-9(i)	6/24/1987	12 M	490	10 J		45 U							
BOP-9(i)	7/2/1987	12	490	12		23 U							
BOP-9(i)	7/6/1987	18	620	13		2.4 M							
BOP-9(i)	7/10/1987	17	610	14		2.8 M							
BOP-9(i)	10/15/1987	13	350	10		3 M							
BOP-9(i)	12/9/1987	110	510	13		4.4							
BOP-9(i)	7/7/1988	130	1300	29		5.3							
BOP-9(i)	1/30/1989	220	1600	60		15							
BOP-9(i)	5/17/1989	150	800	26		11							
BOP-9(i)	7/26/1989	89	500	16		6.0							
BOP-9(i)	11/15/1989	210	460	15	160	13							
BOP-9(i)	2/15/1990	230	710	32	300	13							
BOP-9(i)	6/8/1990	270	610		130								
BOP-9(i)	8/7/1990	280	500	15	150	31							
BOP-9(i)	11/6/1990	290	540	15	150	32	30 U						
BOP-9(i)	2/7/1991	310	540	15	170	37	15 U						
BOP-9(i)	5/15/1991	220	300	10	100	29	10 U						
BOP-9(i)	8/8/1991	270	370	11	100	37	2.0 U						
BOP-9(i)	1/21/1992	160	270	12	110	65	2.0 U						
BOP-9(i)	7/15/1992	190	350	7.9 J	100	22	20 U						
BOP-9(i)-Dup	7/15/1992	190	300	9.9	110	32	2.0 U						
BOP-9(i)	2/17/1993	160 J	270	9.1 J	110 J	31 J	2.0 U						
BOP-9(i)	7/27/1993	120	250	8.1	82	19	2.0 U						
BOP-9(i)	3/2/1994	150 J	270 J	8.7 J	94 J	24 J	2.0 UJ						
BOP-9(i)	5/24/1994	130	220	7.3	78	24	2.0 U						
BOP-9(i)	8/23/1994	92	200	6.6	60	18	2.0 U						
BOP-9(i)	2/23/1995	100	170	5.1	44	20	2.0 U						
BOP-9(i)	9/1/1995	81	190	5.5	49	16	2.0 U						
BOP-9(i)	2/21/1996	53	160	4.7	48	12	2.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-9(i)	8/16/1996	41	120	3.6	32	9.2	2.0 U						
BOP-9(i)	2/18/1997	27	89	2.8	31	6.8	2.0 U						
BOP-9(i)	8/21/1997	25	82	2.7	26	6.7	2.0 U						
BOP-9(i)	2/26/1998	13	77	2.0	35	4.0	2.0 U						
BOP-9(i)	8/25/1998	9.6	68	1.7	30	3.6	2.0 U						
BOP-9(i)	2/17/1999	5.6	61	1.6	26	2.5	2.0 U						
BOP-9(i)	8/21/1999	5.2	46	1.4	21	2.4	1.0 U						
BOP-9(i)	2/18/2000	4.3	44	1.6	22	1.8	1.0 U						
BOP-9(i)	8/30/2000	2.5	24	1.0 U	6.9	1.2	1.0 U						
BOP-9(i)	2/21/2001	2.9	26 J	1.0 U	8.5	1.4	1.0 U						
BOP-9(i)	8/16/2001	2.2	22	1.0 U	7.3	1.4	1.0 U						
BOP-9(i)	2/24/2002	1.9	20	1.0 U	6.0	1.3	1.0 U						
BOP-9(i)	8/16/2002	1.0 U	12	1.0 U	3.2	1.0 U	1.0 U						
BOP-9(i)	2/13/2003	1.2	14	1.0 U	3.9	1.0 U	1.0 U						
BOP-9(i)	8/13/2003	1.0 U	13	1.0 U	3.3	1.0 U	1.0 U						
BOP-9(i)	2/24/2004	1.0 U	13	1.0 U	3.4	1.0 U	1.0 U						
BOP-9(i)	8/12/2004	1.0 U	12	1.0 U	3.1	1.0 U	1.0 U						
BOP-9(i)	2/9/2005	1.0 U	12	1.0 U	2.9	1.0 U	1.0 U						
BOP-9(i)	8/9/2005	1.0 U	8.1	1.0 U	2.2	1.0 U	1.0 U						
BOP-9(i)	2/8/2006	1.0 U	8.3	1.0 U	1.7	1.0 U	1.0 U						
BOP-9(i)	8/10/2006	1.0 U	4.4	1.0 U	1.1	1.0 U	1.0 U						
BOP-9(i)	2/8/2007	0.3	7.3	0.4	1.4	0.4	0.2 U						
BOP-9(i)	8/8/2007	0.3	5.7	0.3	1.1	0.4	0.2 U						
BOP-9(i)	2/19/2008	0.3	5.2	0.3	1.1	0.4	0.2 U						
BOP-9(i)	8/11/2008	1.0 U	3.4	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-9(i)	2/9/2009	1.0 U	11	1.5	2.8 J	1.0 U	1.0 U						
BOP-9(i)	8/18/2009	1.0 U	14	3.1	3.7	1.0 U	1.0 U						
BOP-9(i)	2/3/2010	1.0 U	15	4.7	4.0	1.0 U	1.0 U						
BOP-9(i)	8/11/2010	1.0 U	15	4.2	4.2	1.0 U	1.0 U						
BOP-9(i)	2/7/2011	1.0 U	18	5.3	4.9	1.0 U	1.0 U						
BOP-9(i)	8/3/2011	1.0 U	16	5.5	4.9	1.0 U	1.0 U						
BOP-9(i)	2/2/2012	1.0 U	17	4.4	5.6	1.0 U	1.0 U						
BOP-9(i)	8/14/2012	1.0 U	15	4.7	4.4	1.0 U	1.0 U						
BOP-9(i)	2/4/2013	0.7	33	3.0	10	1.8	0.2 U						
BOP-9(i)	8/21/2013	0.8	62	3.9	16	2.1	0.2 U						
BOP-9(i)	8/5/2014	0.6	50	3.8	13	1.8	0.2 U						
BOP-9(i)	2/3/2015	0.6	33	3.3	11	1.5	0.2 U						
BOP-9(i)	8/5/2015	0.5 U	40	2.9	12	1.5	0.2 U						
BOP-9(i)	2/1/2016	0.5 U	30	2.6	8.8	1.2	0.2 U						
BOP-9(i)	8/8/2016	0.5 U	35	3.5	11	1.5	0.2 U						
Downgradient Corrective Action Area Wells													
BOP-7(i)	3/25/1987	890	860	31		38							
BOP-7(i)	5/19/1987	1200	896	26		11 J							
BOP-7(i)	5/20/1987	1910	931	24 J		13 J							
BOP-7(i)	5/21/1987	859	780	15 J		4 J							
BOP-7(i)	5/21/1987	1210	852	17 J		8 J							
BOP-7(i)	5/22/1987	1260	837	15 J		6 J							
BOP-7(i)	10/20/1987	1800	890	38		47							
BOP-7(i)	12/3/1987	2100	960	40		55							
BOP-7(i)	7/19/1988	2200	600	38		86							
BOP-7(i)	2/1/1989	1500	680	37		95							
BOP-7(i)	5/19/1989	560	1200	44		69							

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-7(i)	8/8/1989	510	840	54		78							
BOP-7(i)	11/13/1989	610	1000	39	130	73							
BOP-7(i)	2/6/1990	880	1000	41	100	81							
BOP-7(i)	6/7/1990	750	1500	42		130							
BOP-7(i)	11/5/1990	540	1200	44	110	120	3.0 U						
BOP-7(i)	2/5/1991	530	1400	48	130	130	75 U						
BOP-7(i)	2/6/1991	530	1400	44	130	130	75 U						
BOP-7(i)	5/14/1991	360	980	42	100	100	2.0 U						
BOP-7(i)	5/15/1991	350	960	40	95	89	10 U						
BOP-7(i)	2/11/1993	190	1300	40	72	68	2.0 U						
BOP-7(i)-Dup	2/11/1993	180	1200	35	70	71	40 U						
BOP-7(i)	5/10/1993	150	1000	30	61	63	2.0 U						
BOP-7(i)	11/29/1993	120	890	30	48	44	2.0 U						
BOP-7(i)	2/14/1994	100	730	29	51	52	2.0 U						
BOP-7(i)	5/31/1994	100	760	31	47	49	2.0 U						
BOP-7(i)	7/30/1994	60 J	720 J	20 J	35 J	33 J	20 U						
BOP-7(i)-Dup	7/30/1994	83 J	920 J	28 J	44 J	46 J	0.2 UJ						
BOP-7(i)	10/24/1994	1.0 U	14	1.0 U	1.0 U	1.0 U	2.0 U						
BOP-7(i)	2/20/1995	61	440	28	44	41	2.0 U						
BOP-7(i)-Dup	2/20/1995	60	500	27	44	40	2.0 U						
BOP-7(i)	5/30/1995	55	740	20	31	32	10 U						
BOP-7(i)	8/22/1995	64	760	23	37	39	10 U						
BOP-7(i)	11/10/1995	56	680	19	34	35	2.0 U						
BOP-7(i)-Dup	11/10/1995	58	670	20	34	36	2.0 U						
BOP-7(i)	2/21/1996	46	670	17	30	29	10 U						
BOP-7(i)	5/29/1996	37 J	610	17	25	24 J	10 U						
BOP-7(i)-Dup	5/29/1996	49 J	580	21	30	33 J	2.0 U						
BOP-7(i)	8/7/1996	35 J	580	16 J	24	25	10 U						
BOP-7(i)-Dup	8/7/1996	45 J	670	20 J	29	34	2.0 U						
BOP-7(i)	11/18/1996	41	710	17	33	35	10 U						
BOP-7(i)	2/20/1997	33	610	16	27	25	10 U						
BOP-7(i)	5/27/1997	29	510	13	26	25	10 U						
BOP-7(i)	8/12/1997	35	610	18	29	30	2.0 U						
BOP-7(i)	2/25/1998	36	620	19	29	30	2.0 U						
BOP-7(i)	8/24/1998	35	840	21	33	38	2.0 U						
BOP-7(i)	2/15/1999	27	660	16	26	30	2.0 U						
BOP-7(i)	8/19/1999	19	450	13	23	21	1.0 U						
BOP-7(i)	2/8/2000	18	440	12	22	22	1.0 U						
BOP-7(i)	8/27/2000	16	320	11	18	14	1.0 U						
BOP-7(i)	2/16/2001	16 J	400 J	11 J	18 J	19 J	1.0 UJ						
BOP-7(i)	8/13/2001	12	330	8.0	16	16	5.0 U						
BOP-7(i)	2/27/2002	10	280	6.9	12	11	3.0 U						
BOP-7(i)	8/9/2002	7.5	210	5.3	8.0	10	3.0 U						
BOP-7(i)	2/11/2003	8.1	180	6.6	9.4	10	1.0 U						
BOP-7(i)	8/7/2003	7.7	210	6.9	9.2	9.6	1.0 U						
BOP-7(i)	2/17/2004	5.8	210	6.4	9.8	12	1.0 U						
BOP-7(i)	8/6/2004	6.3	230	5.8 U	10	12	2.0 U						
BOP-7(i)	2/7/2005	5.0 U	210	5.6	8.6	8.0	5.0 U						
BOP-7(i)	8/4/2005	4.6	160	5.1	7.9	8.4	1.0 U						
BOP-7(i)	2/10/2006	4.7	160	4.7	6.6	8.4	1.0 U						
BOP-7(i)	8/15/2006	2.9	140	3.1	5.8	5.7	1.0 U						
BOP-7(i)	2/8/2007	3.1	110	3.5	5.6	5.9	1.0 U						
BOP-7(i)	8/7/2007	2.7	120	3.2	5.2	6.0	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-7(i)	2/20/2008	2.5	100	3.2	5.2	6.8	1.0 U						
BOP-7(i)	8/12/2008	1.8	82	2.4	3.7	5.0	1.0 U						
BOP-7(i)-157	11/11/2008	1.9	67	2.2	2.9	4.9	0.5 U						
BOP-7(i)-163	11/11/2008	1.3	42	1.6	1.8	3.1	0.5 U						
BOP-7(i)-169	11/11/2008	1.3	44	1.7	1.9	3.2	0.5 U						
BOP-7(i)-175	11/11/2008	1.6	60	2.0	2.4	4.3	0.5 U						
BOP-7(i)	11/11/2008	1.8	68	2.3	3.0	4.8	0.2 U						
BOP-7(i)	2/12/2009	2.8	160	3.6	6 J	8.1	1.0 U						
BOP-7(i)-Dup	2/12/2009	3.1	150	3.6	7.4 J	8.8	1.0 U						
BOP-7(i)	5/21/2009	2.6	170	3.9	6.1	9.6	1.0 U	1.7	7.4	1.5 U	0.7 U	1.2 U	1.1 U
BOP-7(i)	8/26/2009	2.8 J	130	4.5	24	9.5	0.2 U	1.1	7.5	1.5 U	212	1.2 U	1.1 U
BOP-7(i)	11/12/2009	3.0 U	130	3.4	12	6.6	3.0 U	1.1	8.4	1.5 U			
BOP-7(i)	2/5/2010	1.6	90	2.7	7.7	5.6	0.6 U						
BOP-7(i)	5/6/2010	3.0 U	220	4.0	8.0	11	3.0 U	1.8	6.6	1.5 U			
BOP-7(i)	5/26/2010	1.6	120	3.2	4.8	6.6	1.0 U						
BOP-7(i)	8/17/2010	1.5	110	2.9	4.2	6.3	1.0 U	1.7	9.4	1.5 U	5.5	1.2 U	1.1 U
BOP-7(i)-Dup	8/17/2010	1.6	100	2.9	4.4	6.5	1.0 U						
BOP-7(i)	11/17/2010	3.0 U	87	3.0 U	3.4	4.7	3.0 U	1.8	9.4	1.5 U			
BOP-7(i)-Dup	11/17/2010	3.0 U	86	3.0 U	3.2	4.5	3.0 U						
BOP-7(i)	2/14/2011	1.4	100	3.2	3.3	6.2	1.0 U	2.0	9.1	1.5 U	0.7 U	1.2 U	1.1 U
BOP-7(i)-Dup	2/14/2011	1.5	100	3.2	3.4	6.5	1.0 U						
BOP-7(i)	5/4/2011	1.1	91	2.6	3.3	4.5	1.0 U	2.1	9.8	1.5 U	0.7 U	1.2 U	1.1 U
BOP-7(i)-Dup	5/4/2011	1.0 U	81	2.4	3.0	4.1	1.0 U						
BOP-7(i)	8/8/2011	1.2	85	2.6	3.3	5.2	1.0 U	2.2	9.9	1.5 U	0.7 U	1.2 U	1.1 U
BOP-7(i)-Dup	8/8/2011	1.2	86	2.5	3.4	5.2	1.0 U						
BOP-7(i)	11/2/2011	1.4	98	2.5	3.5	5.6 J	1.0 U	2.2	9.4	1.5 U	0.7 U	1.2 U	1.1 U
BOP-7(i)-Dup	11/2/2011	1.5	110	2.8	4.5	7.2 J	1.0 U						
BOP-7(i)	2/7/2012	1.3	86	2.4	3.3	5.2	1.0 U	2.3	9.5	1.5 U	11.8	1.2 U	1.1 U
BOP-7(i)-Dup	2/7/2012	1.3	86	2.4	3.4	5.6	1.0 U						
BOP-7(i)	5/3/2012	1.5	84	2.2	3.7	6.2	1.0 U	2.1	9.1	1.5 U	34.3	1.2 U	1.1 U
BOP-7(i)-Dup	5/3/2012	1.6	87	2.3	4.0	6.7	1.0 U						
BOP-7(i)	8/7/2012	1.5	110	2.7	4.1	6.1	1.0 U	1.5	8.7	2.49	4770	1.2 U	1.1 U
BOP-7(i)-Dup	8/7/2012	1.4	110	2.7	3.8	5.9	1.0 U						
BOP-7(i)	11/9/2012	3.1	270	3.1	12	20	1.0 U	0.1 U	1.3	1.0 U	550	5.0 U	5.0 U
BOP-7(i)-Dup	11/9/2012	2.9	310	2.6	11	18	1.0 U						
BOP-7(i)	2/5/2013	3.4	300	5.3	12	21 J	0.4 U	2.1	7.5	1.0 U	1300	5.0 U	5.0 U
BOP-7i-Dup	2/5/2013	3.6	310	5.5	13	17 J	0.4 U						
BOP-7(i)	5/6/2013	3.7	330	5.5	12	16	1.0 U	2.4	7.8	1.0 U	5.0	5.0 U	5.0 U
BOP-7i-Dup	5/6/2013	4.0	350	5.3	12	14	1.0 U						
BOP-7(i)	8/19/2013	4.0	300	4.9	13 J	19 J	1.0 U	2.5	8.1	1.0 U	5.0 U	5.0 U	5.0 U
BOP-7i-Dup	8/19/2013	4.5	310	5.6	16 J	24 J	0.2 U						
BOP-7(i)	11/11/2013	4.0	220	5.4	12	18	0.2 U	2.4	8.7	1.0 U	5.0 U	5.0 U	5.0 U
BOP-7i-Dup	11/11/2013	4.0	210	5.2	12	17	0.2 U						
BOP-7(i)	8/14/2014	3.0	190	4.4	9.6	13	1.0 U	2.3	9.0	1.0 U	5.0 U	5.0 U	5.0 U
BOP-7i-Dup	8/14/2014	3.4	160	5.2	10	15	0.2 U						
BOP-7(i)	11/7/2014	2.8 J	250	3.9 J	15	17 J	1.0 U	2.4	8.2	1.0 U	11	5.0 U	5.0 U
BOP-7i-Dup	11/7/2014	3.6 J	240	6.8 J	18	22 J	0.2 U						
BOP-7(i)	2/9/2015	3.5	400	6.5	17	23	1.0 U	2.4	7.5	1.0 U	5.0 U	5.0 U	5.0 U
BOP-7i-Dup	2/9/2015	3.3	360	5.8	17	20	1.0 U						
BOP-7(i)	5/8/2015	1.8	73	0.5	54	7.3	0.2 U	0.15	8.6	1.0 U	40	5.0 U	5.0 U
BOP-7i-Dup	5/8/2015	2.0	61	0.6	52	8.9	0.2 U						
BOP-7(i)	8/11/2015	1.0 U	50	1.1	12	4.3	0.4 UJ	0.10 U	7.9	12.9	4700	5.0 U	5.0 U
BOP-7i-Dup	8/11/2015	0.9	60	1.2	12	4.9	0.3						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-7(i)	11/5/2015	8.8 J	310 J	4.7 J	17 J	17 J	2.0 U	2.3	8.7	1.0 U	5.7	5.0 U	5.0 U
BOP-7i-Dup	11/5/2015	3.5 J	250 J	5.8 J	21 J	23 J	0.2 U						
BOP-7(i)	2/4/2016	5 U	350	5.0	20	19	2 U	2.1	7.7	1 U	7.0	5.0 U	5.0 U
BOP-7i-Dup	2/4/2016	3.4	350	5.6	22	22	1 U						
BOP-7(i)	5/4/2016	5.0 U	250	5.5	21	17	2.0 U	2.1	9.1	1.0 U	6.6	5.0 U	5.0 U
BOP-7i-Dup	5/4/2016	3.6	250	7.1	25	23	0.3						
BOP-7(i)	8/11/2016	1.9	160	3.2 J	14 J	12	0.4 U	1.1	8.0	1.0 U	5300	5.0 U	5.0 U
BOP-7i-Dup	8/11/2016	1.6	140	2.6 J	11 J	9.9	0.2 U						
BOP-7(i)	11/8/2016	2.2	230 J	4.5	18	16	0.4 U	1.4	8.9	1.0 U	1800	5.0 U	5.0 U
BOP-7i-Dup	11/8/2016	2.5	160 J	4.7	19	18	0.2 U						
D-7(i)	6/27/1988	49	64	2.5		2.7							
D-7(i)	7/19/1988	58	76	2.9		2.6							
D-7(i)	11/29/1988	58	96	2.6		2.8							
D-7(i)	7/27/1989	16	30	1.0		0.9 J							
D-7(i)	2/26/1990	20	36	0.8 J		3.6							
D-7(i)	8/15/1990	15	45	1.1 M	4.7	2.8							
D-7(i)-Dup	8/15/1990	14	48	1.1 M	5.3	2.6							
D-7(i)	2/18/1991	18	48	1.4	5.7	3.7	3.0 U						
D-7(i)	5/16/1991	17	46	1.6	6.6 M	3.8	2.0 U						
D-7(i)-Dup	5/16/1991	17	45	1.6	6.4	3.8	2.0 U						
D-7(i)	7/10/1991	18	64	2.1	7.2	5.1	2.0 U						
D-7(i)	8/20/1991	19	66	1.9	7.3	5.5	2.0 U						
D-7(i)	1/15/1992	23	84	1.6	10	4.1	3.0 U						
D-7(i)-Dup	1/15/1992	21	76	1.5	8.6	4.0	3.0 U						
D-7(i)	7/21/1992	17	60	1.8	6.3	3.8	2.0 U						
D-7(i)	2/9/1993	18	71	2.1	7.3	4.2	2.0 U						
D-7(i)	7/19/1993	18	77	1.9	7.6	5.1	2.0 U						
D-7(i)-Dup	7/19/1993	12	57	1.8	5.8	3.0	2.0 U						
D-7(i)	2/22/1994	15	70	1.9	7.4	4.4	2.0 U						
D-7(i)-Dup	2/22/1994	14	68	2.0	7.1	4.1	2.0 U						
D-7(i)	8/3/1994	9.4	49	1.5	5.5	2.5	0.2 U						
D-7(i)	2/7/1995	8.4	49	1.6	4.2	3.5	0.2 U						
D-7(i)	8/10/1995	7.4	42	1.0	4.2	2.1	2.0 U						
D-7(i)	2/13/1996	5.1	40	1.1	3.4	2.3	2.0 U						
D-7(i)	8/12/1996	2.6	28	1.0 U	2.2	1.4	2.0 U						
D-7(i)	2/11/1997	1.7	24	1.0 U	1.7	1.0 U	2.0 U						
D-7(i)	8/22/1997	1.6	25	1.0 U	1.6	1.0 U	2.0 U						
D-7(i)	2/25/1998	1.6	26	1.5	1.8	1.0	1.0 U						
D-7(i)	8/20/1998	1.0	21	1.0 U	1.0 U	1.0 U	2.0 U						
D-7(i)	2/17/1999	1.0 U	12	1.0 U	1.0 U	1.0 U	2.0 U						
D-7(i)	8/23/1999	1.0 U	8.4	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/9/2000	1.0 U	7.0	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/21/2000	1.0 U	3.7	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/14/2001	0.2	4.4	0.2 U	0.2 U	0.2 U	0.2 U						
D-7(i)	8/21/2001	1.0 U	3.0	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/26/2002	1.0 U	3.1	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/19/2002	1.0 U	2.4	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/14/2003	1.0 U	2.4	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/18/2003	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/26/2004	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/13/2004	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/14/2005	1.0 U	1.9	1.0 U	1.0 U	1.0 U	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
D-7(i)	8/10/2005	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/8/2006	1.0 U	1.4	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/7/2006	1.0 U	1.4	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/2/2007	1.0 U	1.26	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/7/2007	0.2 U	1.5	0.2 U	0.2 U	0.2 U	0.2 U						
D-7(i)	8/10/2007	0.2 U	1.2	0.2 U	0.2 U	0.2 U	0.2 U						
D-7(i)	2/20/2008	0.2 U	1.5	0.2 U	0.2 U	0.2 U	0.2 U						
D-7(i)	8/7/2008	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	2/10/2009	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/20/2009	1.0 U	15	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/13/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/11/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/14/2012	1.0 U	1.3	1.0 U	1.0 U	1.0 U	1.0 U						
D-7(i)	8/2/2013	0.5 U	1.1	0.2 U	0.2 U	0.2	0.2 U						
D-7(i)	8/4/2014	0.5 U	1.3	0.2 U	0.2 U	0.3	0.2 U						
D-7(i)	8/7/2015	0.5 U	1.4	0.2 U	0.2 U	0.3	0.2 U						
D-7(i)	8/2/2016	0.5 U	1.5	0.6	0.2 U	0.2 U	0.2 U						
D-8(i)	7/25/1988	950	440	23		50							
D-8(i)	11/28/1988	900	570	18		43							
D-8(i)	7/27/1989	96	110	5.1		13							
D-8(i)	2/26/1990	36	120	3.7		13							
D-8(i)	8/15/1990	41	120	3.8	9.4	16							
D-8(i)	2/18/1991	20	71	2.2	5.3	11	3.0 U						
D-8(i)-Dup	2/18/1991	22	77	2.4	4.7	11	3.0 U						
D-8(i)	8/20/1991	30	120	3.7	9.0	15	2.0 U						
D-8(i)	11/25/1991	31	110	3.7	9.2	9.0	2.0 U						
D-8(i)	1/15/1992	35	150	3.2	9.3	13	3.0 U						
D-8(i)	7/21/1992	29	120	3.3	7.8	11	2.0 U						
D-8(i)-Dup	7/21/1992	30	120	3.4	7.6	10	2.0 U						
D-8(i)	2/9/1993	27	110	3.4	7.0	11	2.0 U						
D-8(i)	7/19/1993	23	100	3.1	7.1	13	2.0 U						
D-8(i)	2/22/1994	30	130	4.5	9.6	14	2.0 U						
D-8(i)	8/3/1994	20	110	3.4	7.4	9.4	2.0 U						
D-8(i)	2/7/1995	3.7	33	1.0	1.3	4.5	2.0 U						
D-8(i)	8/10/1995	42	140	4.5	12	14	2.0 U						
D-8(i)	2/13/1996	25	120	3.5	8.6	9.4	2.0 U						
D-8(i)	8/12/1996	24	160	5.1	10	11	2.0 U						
D-8(i)	2/11/1997	14	120	3.8	8.0	8.3	2.0 U						
D-8(i)	8/22/1997	14	140	4.7	8.9	8.7	2.0 U						
D-8(i)	2/25/1998	9.9	110	3.2	5.8	6.4	2.0 U						
D-8(i)	8/20/1998	8.4	120	4.2	5.8	6.6	2.0 U						
D-8(i)	2/17/1999	6.1	110	2.6	4.3	5.9	2.0 U						
D-8(i)	8/23/1999	5.3	75	2.3	3.6	4.8	1.0 U						
D-8(i)	2/9/2000	4.0	70	1.9	3.3	4.0	1.0 U						
D-8(i)	8/21/2000	2.5	43	1.2	1.6	2.6	1.0 U						
D-8(i)	2/14/2001	2.0	39	1.2	1.3	2.2	0.2 U						
D-8(i)	8/21/2001	1.7	27	1.0 U	1.0	1.6	1.0 U						
D-8(i)	2/26/2002	1.5	28	1.0 U	1.3	1.6	1.0 U						
D-8(i)	8/19/2002	1.0 U	22	1.0 U	1.0 U	1.4	1.0 U						
D-8(i)	2/14/2003	1.6	28	1.0 U	1.2	1.7	1.0 U						
D-8(i)	8/18/2003	1.0 U	26	1.0 U	1.1	1.6	1.0 U						
D-8(i)	2/26/2004	1.0 U	24	1.0 U	1.0 U	1.4	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
D-8(i)	8/13/2004	1.3	27	1.0 U	1.4	2.2	1.0 U						
D-8(i)	2/14/2005	1.0	23	1.0 U	1.0 U	1.2	1.0 U						
D-8(i)	8/10/2005	1.0	26	1.0 U	1.2	1.5	1.0 U						
D-8(i)	2/8/2006	1.1	25	1.0 U	1.0	1.4	1.0 U						
D-8(i)	8/7/2006	1.0 U	21	1.0 U	1.0 U	1.0 U	1.0 U						
D-8(i)	2/7/2007	0.7	20	0.8	0.9	1.4	0.2 U						
D-8(i)	8/10/2007	0.7	19	0.6 U	0.8	1.3	0.6 U						
D-8(i)	2/20/2008	0.9	24	0.9	1.0	1.8	0.6 U						
D-8(i)	8/7/2008	1.0 U	17	1.0 U	1.0 U	1.1	1.0 U						
D-8(i)	2/10/2009	1.0 U	34	1.0 U	1.5	2.0	1.0 U						
D-8(i)	8/20/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-8(i)	10/7/2009	1.0 U	22	1.0 U	1.1	1.6	1.0 U						
D-8(i)	2/3/2010	1.0 U	20	1.0 U	1.0 U	1.1	1.0 U						
D-8(i)	8/13/2010	1.0 U	14	1.0 U	1.0 U	1.0 U	1.0 U						
D-8(i)	2/14/2011	1.0 U	34	1.1	1.3	2.6	1.0 U						
D-8(i)	8/11/2011	1.0 U	14	1.0 U	1.0 U	1.0 U	1.0 U						
D-8(i)	2/2/2012	1.0 U	9.7	1.0 U	1.0 U	1.0 U	1.0 U						
D-8(i)	8/14/2012	1.0 U	23	1.0 U	1.0	1.5	1.0 U						
D-8(i)	2/4/2013	0.6	29	0.7	1.3	1.9	0.2 U						
D-8(i)	8/2/2013	0.6	30	0.9	1.7	2.8	0.2 U						
D-8(i)	8/4/2014	0.5 U	25	0.8	1.0	1.8	0.2 U						
D-8(i)	2/6/2015	0.5 U	23	0.7	0.8	1.4	0.2 U						
D-8(i)	8/7/2015	0.5 U	7.4	0.3	0.4	0.7	0.2 U						
D-8(i)	2/1/2016	0.5	26	0.9	1.3	2.2	0.2 U						
D-8(i)	8/2/2016	0.7	32	1.3	1.8	2.5	0.2 U						
D-11(i)	4/27/1989	2.9	15			1.1 M							
D-11(i)-Dup	4/27/1989	2.9	15			1 M							
D-11(i)	7/31/1989	0.8 M	5.5										
D-11(i)	3/1/1990		1.9										
D-11(i)-Dup	3/1/1990		1.9										
D-11(i)	8/16/1990	0.7 J	5.7		0.9 J								
D-11(i)	2/18/1991	1.0 U	1.4	1.0 U	1.0 U	1.0 U	3.0 U						
D-11(i)	8/21/1991	0.7 M	4.2	1.0 U	0.9 J	1.6 U	2.0 U						
D-11(i)	11/25/1991	0.6 M	3.8	1.0 U	0.8 J	1.0 U	2.0 U						
D-11(i)	1/16/1992	0.6 J	4.9	1.0 U	1.0 U	2.0 U	3.0 U						
D-11(i)	7/22/1992	0.6 M	5.1	1.0 U	0.9 J	1.0 U	2.0 U						
D-11(i)	2/9/1993	1.0 U	8.3	1.0 U	1.6	1.0 U	2.0 U						
D-11(i)-Dup	2/9/1993	1.0 U	8.7	1.0 U	1.6	1.0 U	2.0 U						
D-11(i)	7/19/1993	0.8 J	5.5	1.0 U	1.2	1.0 U	2.0 U						
D-11(i)	2/22/1994	1.0 U	5.4	1.0 U	1.0	1.0 U	2.0 U						
D-11(i)	8/24/1994	0.41	3.5	0.24	0.74	0.26	0.2 U						
D-11(i)	2/23/1995	0.2 U	0.3	0.2 U	0.2 U	0.2 U	0.2 U						
D-11(i)	8/17/1995	1.0 U	1.1	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	2/15/1996	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	8/8/1996	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	2/14/1997	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	8/7/1997	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	2/27/1998	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	8/24/1998	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	2/15/1999	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U						
D-11(i)	8/19/1999	1.0 U	5.1	1.0 U	1.1	1.0 U	1.0 U						
D-11(i)	2/16/2000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
D-11(i)	8/28/2000	1.0 U	3.1	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/14/2001	0.3	5.2	0.2 U	0.8	0.4	0.2 U						
D-11(i)	8/21/2001	1.0 U	4.6	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/26/2002	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/14/2002	1.0 U	3.9	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/14/2003	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/12/2003	1.0 U	4.3	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/26/2004	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/11/2004	1.0 U	3.3	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/10/2005	1.0 U	3.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/8/2005	1.0 U	2.9	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/7/2006	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/7/2006	1.0 U	1.9	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/7/2007	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U						
D-11(i)	8/10/2007	0.2 U	2.5	0.2 U	0.5	0.2	0.2 U						
D-11(i)	2/20/2008	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U						
D-11(i)	8/7/2008	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	2/10/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/20/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/13/2010	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/11/2011	1.0 U	1.5	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/14/2012	1.0 U	2.5	1.0 U	1.0 U	1.0 U	1.0 U						
D-11(i)	8/2/2013	0.5 U	1.5	0.2	0.3	0.2 U	0.2 U						
D-11(i)	8/4/2014	0.5 U	0.6	0.2 U	0.2 U	0.2 U	0.2 U						
D-11(i)	8/7/2015	0.5 U	0.3	0.2 U	0.2 U	0.2 U	0.2 U						
D-11(i)	8/2/2016	0.5 U	2.3	0.2	0.3	0.2 U	0.2 U						
D-12(i)	3/1/1990	24	110	4.5	4.7	15							
D-12(i)	8/16/1990	25	170	5.1	5.1	35							
D-12(i)	2/18/1991	22	150	4.0	4.1	30	3.0 U						
D-12(i)	8/21/1991	21	150	4.0	4.5	33	2.0 U						
D-12(i)	11/25/1991	21	160	4.2	5.4	19	2.0 U						
D-12(i)	1/16/1992	25	200	4.2	4.6	22	3.0 U						
D-12(i)	7/22/1992	21	160	4.2	4.5	24	2.0 U						
D-12(i)-Dup	7/22/1992	19	140	3.5	3.9	22	2.0 U						
D-12(i)	2/9/1993	18	140	3.9	4.5	22	2.0 U						
D-12(i)	7/19/1993	14	120	3.1	3.4	22	2.0 U						
D-12(i)	2/28/1994	14	110	3.0	3.8	17	2.0 U						
D-12(i)	8/24/1994	11	95	3.0	3.8	15	2.0 U						
D-12(i)-Dup	8/24/1994	11	96	2.9	3.6	15	2.0 U						
D-12(i)	2/23/1995	6.4 J	64	1.8 J	1.7	11	2.0 U						
D-12(i)-Dup	2/23/1995	5.2 J	55	1.3 J	1.6	9.5	2.0 U						
D-12(i)	8/17/1995	17	96	3.0	6.8	14	2.0 U						
D-12(i)	2/15/1996	8.1	45	1.3	3.3	7.0	2.0 U						
D-12(i)	8/8/1996	7.3	47	1.7	4.2	6.5	2.0 U						
D-12(i)	2/13/1997	3.5	29	1.1	2.5	3.9	2.0 U						
D-12(i)-Dup	2/13/1997	3.2	27	1.0 U	2.2	3.3	2.0 U						
D-12(i)	8/25/1997	4.0	38	1.5	4.2	4.0	2.0 U						
D-12(i)	2/27/1998	1.8	20	1.0 U	1.7	2.3	2.0 U						
D-12(i)	8/24/1998	1.4	17	1.0 U	1.2	1.9	2.0 U						
D-12(i)	2/15/1999	1.0 U	12	1.0 U	1.0 U	1.4	2.0 U						
D-12(i)	8/19/1999	1.1	12	1.0 U	1.0 U	1.1	1.0 U						
D-12(i)	2/15/2000	1.6	16	1.0 U	1.0 U	1.7	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
D-12(i)	8/28/2000	1.7	16	1.0 U	1.0 U	2.6	1.0 U						
D-12(i)	2/14/2001	2.1	25	0.8	0.9	2.2	0.2 U						
D-12(i)	8/21/2001	1.3	15	1.0 U	1.0 U	1.7	1.0 U						
D-12(i)	2/24/2002	1.1	15	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/14/2002	1.0 U	10	1.0 U	1.0 U	1.2	1.0 U						
D-12(i)	2/14/2003	1.0 U	9.5	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/12/2003	1.0 U	8.6	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/26/2004	1.0 U	9.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/11/2004	1.0 U	7.7	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/10/2005	1.0 U	6.6	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/9/2005	1.0 U	5.7	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/7/2006	1.0 U	4.6	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/7/2006	1.0 U	4.7	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/7/2007	0.2 U	5.4	0.2	0.2 U	0.5	0.2 U						
D-12(i)	8/10/2007	0.2 U	4.6	0.2 U	0.2 U	0.4	0.2 U						
D-12(i)	2/20/2008	0.2 U	4.1	0.2 U	0.2 U	0.6	0.2 U						
D-12(i)	8/7/2008	1.0 U	3.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/10/2009	1.0 U	4.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/20/2009	1.0 U	2.8	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/3/2010	1.0 U	2.7	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)-Dup	2/3/2010	1.0 U	2.7	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/13/2010	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/14/2011	1.0 U	2.3	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/11/2011	1.0 U	2.0	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/2/2012	1.0 U	2.1	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	8/14/2012	1.0 U	2.0	1.0 U	1.0 U	1.0 U	1.0 U						
D-12(i)	2/4/2013	0.5 U	2.8	0.2 U	0.2 U	0.8	0.2 U						
D-12(i)	8/2/2013	0.5 U	1.6	0.2 U	0.2 U	0.2 U	0.2 U						
D-12(i)	8/4/2014	0.5 U	2.7	0.2 U	0.2 U	0.6	0.2 U						
D-12(i)	2/3/2015	0.5 U	2.7	0.2 U	0.2 U	0.6	0.2 U						
D-12(i)	8/7/2015	0.5 U	3.1	0.2 U	0.2 U	0.6	0.2 U						
D-12(i)	2/1/2016	0.5 U	3.2	0.2 U	0.2 U	0.7	0.2 U						
D-12(i)	8/2/2016	0.5 U	3.2	0.3	0.2 U	0.7	0.2 U						
D-13(i)	11/5/1991	1.0 U	1.1	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	1/16/1992	1.0 U	1.9	1.0 U	1.0 U	2.0 U	3.0 U						
D-13(i)	7/22/1992	1.0 U	2.6	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	10/26/1992	1.0 U	3.8	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	2/8/1993	1.0 U	4.2	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)-Dup	2/8/1993	1.0 U	4.1	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	7/20/1993	1.0 U	4.0	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)-Dup	7/20/1993	1.0 U	4.0	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	2/16/1994	1.0 U	4.0	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	8/11/1994	0.6	5.1	0.2 U	0.21	0.28	0.2 U						
D-13(i)	3/1/1995	0.51	4.3	0.2 U	0.2 U	0.27	0.2 U						
D-13(i)	8/15/1995	1.0 U	3.4	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	2/16/1996	1.0 U	3.6	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	8/2/1996	1.0 U	3.0	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	2/24/1997	1.0 U	2.7	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	8/18/1997	1.0 U	2.1	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	3/9/1998	1.0 U	1.8	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	8/26/1998	1.0 U	1.7	1.0 U	1.0 U	1.0 U	2.0 U						
D-13(i)	2/18/1999	1.0 U	1.3	1.0 U	1.0 U	1.0 U	2.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
D-13(i)	8/20/1999	1.0 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/18/2000	1.0 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	8/29/2000	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/15/2001	0.2 U	1.3	0.2 U	0.2 U	0.2 U	0.2 U						
D-13(i)	8/21/2001	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/25/2002	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	8/19/2002	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/14/2003	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	8/18/2003	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/26/2004	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	8/13/2004	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/11/2005	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	8/9/2005	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/3/2006	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	8/7/2006	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/8/2007	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U						
D-13(i)	8/10/2007	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U						
D-13(i)	2/19/2008	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U						
D-13(i)	8/8/2008	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
D-13(i)	2/10/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	3/28/1989	980	440	18	130	57							
E-2	4/6/1989	1200	520	28	120	60							
E-2	4/12/1989	1100	440		110								
E-2	4/18/1989	1000	540		100								
E-2	4/25/1989	820	460		92								
E-2	5/2/1989	850	470		90								
E-2	5/9/1989	700	430		72								
E-2	5/16/1989	830	500		90								
E-2	5/23/1989	670	440		70								
E-2	5/30/1989	760	440		79								
E-2	6/7/1989	760	510		71								
E-2	6/13/1989	650	490	22	77	42							
E-2	6/20/1989	680	460	18	76	42							
E-2	6/27/1989	500	450	18	53	32							
E-2	7/5/1989	560	460	18	58	31							
E-2	7/11/1989	580	440	17	66	35							
E-2	7/18/1989	600	460	20	68	40							
E-2	7/25/1989	550	470	18	64	34							
E-2	8/1/1989	530	490	22	59	34							
E-2	8/8/1989	560	400	18	89	36							
E-2	8/15/1989	640	550	26	100	45							
E-2	8/22/1989	470	440	22	81	32							
E-2	8/29/1989	530	490	24	87	37							
E-2	9/5/1989	540	550	23	99	38							
E-2	9/12/1989	550	570	16	82	29							
E-2	9/26/1989	510	510	20	79	32							
E-2	10/3/1989	470	460	20	79	35							
E-2	10/10/1989	430	440	19	66	30							
E-2	10/17/1989	460	490	20	82	39							
E-2	10/24/1989	520	580	26	90	40							
E-2	11/15/1989	300	430	16	70	25							
E-2	11/21/1989	320	480	17	55	25							

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-2	11/28/1989	330	490	17	60	29							
E-2	12/5/1989	330	520	18	56	27							
E-2	12/12/1989	320	510	20	61	25							
E-2	12/19/1989	460	680	25	81	31							
E-2	1/4/1990	420	610	21	88	34							
E-2	1/17/1990	440	680	24	95	37							
E-2	1/31/1990	970	1000	38	130	68							
E-2	2/14/1990	470	580	19	71	39							
E-2	2/28/1990	520	640	28	59	28							
E-2	3/14/1990	560	760	27	62	55							
E-2	3/28/1990	570	770	22	64	54							
E-2	4/11/1990	470	800	28	55	46							
E-2	4/25/1990	460	730	23	51	52							
E-2	5/8/1990	510	730	31	62	62							
E-2	5/22/1990	480	700	24	54	59							
E-2	6/6/1990	470	700	23	48	59							
E-2	6/19/1990	420	670	21	46	46							
E-2	7/3/1990	370	570	19	49	38							
E-2	7/17/1990	400	550	19	46	50							
E-2	7/31/1990	430	580	13	45	62							
E-2	8/14/1990	460	650 B	21	52	57							
E-2	8/28/1990	400	540	20	46	55							
E-2	9/11/1990	400	540	19	48	52							
E-2	9/27/1990	360	530	18	49	54							
E-2	10/9/1990	410	550	19	47	57							
E-2	10/29/1990	380	530	18	42	58							
E-2	11/14/1990	400	550	18	36	58							
E-2	11/28/1990	440	550	22	48	58							
E-2	12/11/1990	390	560	18	57	64							
E-2	1/2/1991	390	510	18	41	59	15 U						
E-2	1/15/1991	420	540	19	44	62	15 U						
E-2	2/5/1991	450	560	18	47	66	15 U						
E-2	3/5/1991	430	550	19	31	69	15 U						
E-2	4/2/1991	180	320	10	32	34	10 U						
E-2	5/7/1991	110	220	7.7	22	24	10 U						
E-2	6/3/1991	99	210	7.0	22	23	10 U						
E-2	7/1/1991	110	230	7.5	20	24	4.0 U						
E-2	8/5/1991	73	160	5.6	17	19	4.0 U						
E-2	9/3/1991	85	220	6.7	23	20	6.0 U						
E-2	10/2/1991	56	130	5.6	16	10	4.0 U						
E-2	11/4/1991	61	160	5.8	18	12	2.0 U						
E-2	12/4/1991	53	150	4.7	14	12	3.0 U						
E-2	1/6/1992	45	130	5.5	14	10	2.0 U						
E-2	2/4/1992	44	130	4.6	15	16	4.0 U						
E-2	3/3/1992	35	110	3.7	12	11	4.0 U						
E-2	4/6/1992	47	140	6.0	16	15	4.0 U						
E-2	5/4/1992	36	120	4.3	13	11	4.0 U						
E-2	6/2/1992	36	110	3.9	13	11	4.0 U						
E-2	7/6/1992	37	120	4.2	11	12	4.0 U						
E-2	8/10/1992	17	60	2.1	5.9	5.6	2.0 U						
E-2	9/1/1992	40	140	5.1	13	12	2.0 U						
E-2	10/1/1992	38	140	4.9	13	11	2.0 U						
E-2	11/2/1992	36	130	4.1	11	9.2	2.0 U						

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-2	12/1/1992	34	110	4.1	11	11	2.0 U						
E-2	1/1/1993	29	97	3.7 J	9.7	9.9	2.0 U						
E-2	2/1/1993	31	120	3.8	11	11	2.0 U						
E-2	3/3/1993	31	120	4.2	12	11	2.0 U						
E-2	3/29/1993	25	100	2.6	9.3	8.7	2.0 U						
E-2	4/28/1993	26	110	3.0	9.5	9.5	2.0 U						
E-2	5/25/1993	26	110	3.1	11	11	2.0 U						
E-2	6/23/1993	24	94	3.0	9.5	8.8	2.0 U						
E-2	7/30/1993	23	93	2.9	8.7	8.7	2.0 U						
E-2	8/25/1993	23	96	1.0 U	9.0	9.2	2.0 U						
E-2	9/29/1993	22	95	2.6	8.4	8.7	2.0 U						
E-2	10/27/1993	21	95	2.8	8.6	9.2	2.0 U						
E-2	11/22/1993	20	96	3.1	8.6	8.8	2.0 U						
E-2	12/27/1993	20	90	2.9	8.6	8.6	2.0 U						
E-2	1/26/1994	19	92	3.0	7.8	8.9	2.0 U						
E-2	2/23/1994	19	86	3.0	8.6	9.0	2.0 U						
E-2	4/4/1994	18	80	2.7	7.3	7.8	2.0 U						
E-2	4/26/1994	17 J	72	2.2	7.1	7.4	2.0 U						
E-2	6/29/1994	20	85	3.2	7.8	9.3	2.0 U						
E-2	10/26/1994	22	83	2.9	6.9	5.8	2.0 U						
E-2	12/21/1994	22	110	3.8	9.9	9.4	2.0 U						
E-2	3/3/1995	19 J	110 J	3.7	7.5	8.5	2.0 U						
E-2	6/1/1995	18	110	3.7	7.7	8.8	2.0 U						
E-2	8/29/1995	17	93	3.2	7.6	9.1	2.0 U						
E-2	11/9/1995	13 J	69 J	2.1 J	5.6 J	6 J	2.0 UJ						
E-2	3/4/1996	18	130	4.0	7.0	7.5	2.0 U						
E-2	5/31/1996	21	150	4.6	7.7	8.8	2.0 U						
E-2	8/26/1996	13	85	2.4	5.9	6.4	2.0 U						
E-2	11/20/1996	11	77	2.2	5.8	6.5	2.0 U						
E-2	3/6/1997	16	130	4.0	8.6	8.6	2.0 U						
E-2	5/27/1997	11	94	2.8	6.1	5.7	2.0 U						
E-2	9/2/1997	9.6	83	2.6	6.2	6.4	2.0 U						
E-2	11/3/1997	9.6	84	2.7	6.4	7.1	2.0 U						
E-2	2/24/1998	7.6	62	1.8	4.9	5.1	2.0 U						
E-2	5/5/1998	8.2 J	68	2.3	5.9	6.4	2.0 U						
E-2	8/3/1998	5.7	57	1.9	4.3	4.7	2.0 U						
E-2	11/2/1998	8.7	95	2.8	6.1	7.5	2.0 U						
E-2	2/1/1999	2.6	35	1.0	1.9	3.0	2.0 U						
E-2	5/3/1999	3.3	45	1.2	2.3	3.4	1.0 U						
E-2	8/2/1999	2.6	42	1.2	2.1	2.6	1.0 U						
E-2	11/1/1999	2.2	33	1 J	1.8	3.0	1.0 U						
E-2	2/4/2000	3.0	45	1.0 U	2.2	3.7	1.0 U						
E-2	5/1/2000	1.7	22	1.0 U	1.3	2.0	1.0 U						
E-2	8/2/2000	1.2	16	1.0 U	1.1	1.7	1.0 U						
E-2	11/1/2000	1.0 U	12	1.0 U	1.0 U	1.0	1.0 U						
E-2	2/1/2001	1 J	13	1.0 U	1 J	1.1	1.0 U						
E-2	5/1/2001	1.0 U	9.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	8/6/2001	1.0 U	13	1.0 U	1.0 U	1.0	1.0 U						
E-2	11/1/2001	1.0	14	1.0 U	1.0 U	1.2	1.0 U						
E-2	2/2/2002	1.0 U	13	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	5/8/2002	1.0 U	16	1.0 U	1.0 U	1.5	1.0 U						
E-2	8/1/2002	1.0 U	12	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	11/4/2002	1.0 U	13	1.0 U	1.0 U	1.4	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-2	2/4/2003	1.0 U	11	1.0 U	1.0 U	1.1	1.0 U						
E-2	5/7/2003	1.0 U	14	1.0 U	1.0 U	1.3	1.0 U						
E-2	8/6/2003	1.0 U	11	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	11/5/2003	1.0 U	10	1.0 U	1.0 U	1.1	1.0 U						
E-2	2/3/2004	1.0 U	14	1.0 U	1.0 U	1.4	1.0 U						
E-2	5/6/2004	1.0 U	14	1.0 U	1.0 U	1.3	1.0 U						
E-2	8/3/2004	1.0 U	16	1.0 U	1.0 U	1.5	1.0 U						
E-2	11/1/2004	1.0 U	14	1.0 U	1.0 U	1.5	1.0 U						
E-2	2/3/2005	1.0 U	12	1.0 U	1.0 U	1.1	1.0 U						
E-2	5/3/2005	1.0 U	13	1.0 U	1.0	1.2	1.0 U						
E-2	8/2/2005	1.0 U	13	1.0 U	1.0 U	1.3	1.0 U						
E-2	12/16/2005	1.0 U	8.3	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	2/7/2006	1.0 U	12	1.0 U	1.0 U	1.1	1.0 U						
E-2	5/9/2006	1.0 U	10	1.0 U	1.0 U	1.1	1.0 U						
E-2	8/8/2006	1.0 U	12	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	11/9/2006	0.6	12	0.4	0.6	1.2	0.2 U						
E-2	2/7/2007	0.7	13	0.4	0.7	1.4	0.2 U						
E-2	5/11/2007	0.7	13	0.4	0.6	1.4	0.2 U						
E-2	8/13/2007	0.7	12	0.4	0.6	1.4	0.2 U						
E-2	11/7/2007	0.7	15	0.4	0.7	1.8	0.2 U						
E-2	2/14/2008	1.0 U	7.4	1.0 U	1.0 U	1.0 U	1.0 U	2.82	12.6	1.5 U			
E-2	5/12/2008	1.0 U	19	1.3	1.0 U	1.3	1.0 U						
E-2	8/12/2008	1.0 U	8.2	1.0 U	1.0 U	1.0	1.0 U						
E-2	11/5/2008	0.9	2.2	0.2 U	0.2	1.2	0.2 U						
E-2	2/3/2009	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	0.1 U	254			
E-2	5/6/2009	1.0 U	2.5	1.0 U	5.9	1.2	1.0 U	0.1 U	7.4	11.1			
E-2	8/6/2009	1.0 U	10	1.0 U	5.8	2.0	1.0 U	1.3 J	10.3	4.62	5270	1.2 U	1.1 U
E-2	11/4/2009	1.0 U	3.8	1.0 U	3.1	1.4	1.9 J	1.3	8.2	2.65			
E-2	2/2/2010	1.0 U	13	1.0 U	1.3	1.9	1.0	6.2	11.3	12.8 J			
E-2	5/5/2010	1.0 U	22	1.0 U	1.5	2.6	1.0 U	1.8	8.8	1.5 U			
E-2	8/9/2010	1.0 U	16	1.0 U	1.0 U	2.0	1.0 U	2.0	9.4	11.7	8100	1.2 U	1.1 U
E-2	11/15/2010	1.0 U	14	1.0 U	1.0 U	1.9	1.0 U	1.8	9.3	1.5 U			
E-2	1/31/2011	1.0 U	17	1.0 U	1.0 U	2.2	1.0 U	1.9	9.0	1.5 U	8900	1.2 U	1.1 U
E-2	5/2/2011	1.0 U	16	1.0 U	1.0 U	2.0	1.0 U	1.6	8.4	1.5 U	8430	1.2 U	1.1 U
E-2-Dup	5/2/2011	1.0 U	16	1.0 U	1.0 U	2.0	1.0 U						
E-2	8/2/2011	1.0 U	9.6	1.0 U	1.0 U	1.1	1.0 U	1.5	7.8	1.5 U	4430	1.2 U	1.1 U
E-2	10/31/2011	1.0 U	3.8	1.0 U	1.0 U	1.0 U	1.0 U	1.1	7.5	1.5 U	7430	1.2 U	1.1 U
E-2-Dup	10/31/2011	1.0 U	4.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	2/7/2012	1.0 U	3.1	1.0 U	1.0 U	1.0 U	1.0 U	1.6	9.6	1.5 U	5350	1.2 U	1.1 U
E-2	5/7/2012	1.0 U	4.2	1.0 U	1.0 U	1.0 U	1.0 U	1.6	8.7	1.8 J	14200	1.2 U	1.1 U
E-2-Dup	5/7/2012	1.0 U	4.1	1.0 U	1.0 U	1.0 U	1.0 U						
E-2	8/8/2012	1.0 U	2.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0	6.9	4.51	18700	1.2 U	1.1 U
E-2	11/7/2012	0.5 U	3.2	0.8	0.8	0.7	0.2	2.2	10	1.0 U	2200 J	5.0 U	5.0 U
E-2-Dup	11/7/2012	0.5 U	3.2	0.8	0.9	0.6	0.2						
E-2	2/8/2013	0.5 U	3.2	0.7	0.7	0.5 J	0.3	0.86	7.3	1.0 U	24000	5.0 U	5.0 U
E-2	5/7/2013	0.5 U	3.0	0.6	0.7	0.4	0.5	0.53	5.8	1.9	13000	5.0 U	5.0 U
E-2-Dup	5/7/2013	0.5 U	2.8	0.5	0.6	0.3	0.4						
E-2	8/2/2013	0.5 U	2.9	0.7	0.7	0.7	0.3	1.9	8.2	1.1	5900	5.0 U	5.0 U
E-2	11/12/2013	0.5 U	2.6	0.5	0.5	0.6	0.3						
E-2-Dup	11/12/2013	0.5 U	2.5	0.6	0.5	0.6	0.3	1.9	8.5	1.0 U	7600	5.0 U	5.0 U
E-2	8/14/2014	0.5 U	2.4	0.4	0.7	0.5	0.4	0.10 U	48.8	113	11000	5.0 U	5.0 U
E-2	11/3/2014	0.5 U	2.7 J	0.5	0.9	0.7	0.4	1.2 J	9.2	1.4	9300	5.0 U	5.0 U
E-2-Dup	11/3/2014	0.5 U	2.2 J	0.4	0.8	0.6	0.4						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-2	2/4/2015	0.5 U	2.1	0.4	0.5	0.5	0.3	1.8	9.7	1.0 U	8900	5.0 U	5.0 U
E-2	5/7/2015	0.5 U	2.4	0.4	0.5	0.5	0.3						
E-2-Dup	5/7/2015	0.5 U	2.4	0.4	0.5	0.5	0.3	1.6	8.3	1.0 U	9200	5.0 U	5.0 U
E-2	7/13/2015	0.5 U	3.6	0.4	1.4	0.5	0.6			216			
E-2	8/5/2015	0.5 U	2.5	0.4	1.7	0.4	0.7	0.5	4.5	71.4	20000	5.0 U	5.0 U
E-2	11/5/2015	0.5 U	3.1	0.5	0.9	0.4	0.2 U	1.2	14.5	1.0 U	11000	5.0 U	5.0 U
E-2-Dup	11/5/2015	0.5 U	2.9	0.5	1.0	0.4	0.3						
E-2	2/5/2016	0.5 U	1.4	0.2	1	0.2	1.1	0.12	4.2	2.0	26000	5 U	5 U
E-2	5/5/2016	0.5 U	1.3	0.2	1.0	0.2	1.2						
E-2	5/5/2016	0.5 U	1.5	0.3	1.0	0.2	1.2	0.26	2.8	1.0 U	32000	5.0 U	5.0 U
E-2	8/10/2016	0.5 U	1.8	0.2	1.5	0.4	0.6	0.10 U	5.3	1.1	27000	8.5	5.0 U
E-2	11/7/2016	0.5 U	0.7	0.2 U	1.3	0.2	0.6 J	0.10 U	4.1	2.0	24000	5.0 U	5.0 U
E-2-Dup	11/7/2016	0.5 U	0.6	0.2 U	1.2	0.2	0.6 J						
E-3	3/28/1989	430	680	21	100	33							
E-3	4/6/1989	590	890	44	120	50							
E-3	4/12/1989	570	850	27	120	45							
E-3	4/18/1989	430	820	36	86	38							
E-3	4/25/1989	420	790	31	100	41							
E-3	5/2/1989	410	770	37	93	40							
E-3	5/9/1989	400	750	25	81	39							
E-3	5/16/1989	570	900	31	110	55							
E-3	5/23/1989	520	800	31	85	52							
E-3	5/30/1989	450	700	29	89	43							
E-3	6/7/1989	890	1100	48	120	75							
E-3	6/13/1989	460	860	37	95	54							
E-3	6/20/1989	430	780	31	91	50							
E-3	6/27/1989	370	750	30	66	41							
E-3	7/5/1989	480	830	37	82	51							
E-3	7/11/1989	460	780	33	85	52							
E-3	7/18/1989	490	870	38	85	55							
E-3	7/25/1989	500	960	37	90	59							
E-3	8/1/1989	450	880	40	76	55							
E-3	8/8/1989	490	720	34	110	60							
E-3	8/15/1989	420	790	39	110	54							
E-3	8/22/1989	470	800	42	110	53							
E-3	8/29/1989	580	940	47	130	65							
E-3	9/5/1989	570	1000	46	130	67							
E-3	9/12/1989	550	1100	29	110	50							
E-3	9/26/1989	470	920	39	110	63							
E-3	10/3/1989	550	870	40	120	68							
E-3	10/10/1989	470	780	35	94	51							
E-3	10/17/1989	540	950	38	130	70							
E-3	10/24/1989	690	1000	53	140	84							
E-3	11/15/1989	210	600	23	74	34							
E-3	11/21/1989	400	800	30	76	45							
E-3	11/28/1989	420	870	34	82	57							
E-3	12/5/1989	440	920	35	81	51							
E-3	12/12/1989	420	880	36	88	52							
E-3	12/19/1989	290	720	26	84	37							
E-3	1/4/1990	390	820	28	100	42							
E-3	1/17/1990	480	920	32	120	56							
E-3	1/31/1990	440	710	29	85	54							

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-3	2/14/1990	450	740	24	91	54							
E-3	2/28/1990	450	830	36	78	41							
E-3	3/14/1990	480	1000	49	76	81							
E-3	3/28/1990	480	990	36	85	83							
E-3	4/11/1990	470	1100	36	82	85							
E-3	4/25/1990	350	850	28	66	59							
E-3	5/8/1990	420	940	43	79	88							
E-3	5/22/1990	420	950	33	73	93							
E-3	6/6/1990	400	910	32	68	90							
E-3	6/19/1990	300	810	27	59	59							
E-3	7/3/1990	310	800	29	67	66							
E-3	7/17/1990	290	740	23	61	70							
E-3	7/31/1990	320	750	17	59	80							
E-3	8/14/1990	360	830 B	28	72	100							
E-3	8/28/1990	310	760	30	64	84							
E-3	9/11/1990	260	640	22	53	77							
E-3	9/27/1990	280	730	25	66	78							
E-3	10/9/1990	350	840	27	66	100							
E-3	10/29/1990	300	750	26	60	98							
E-3	11/14/1990	96	330	11	21	34							
E-3	11/28/1990	180	530	20	42	72							
E-3	12/11/1990	260	730	23	69	82							
E-3	1/2/1991	260	700	26	54	86	15 U						
E-3	1/15/1991	230	610	21	53	68	15 U						
E-3	2/5/1991	230	580	19	53	69	15 U						
E-3	3/5/1991	200	510	18	32	63	15 U						
E-3	4/2/1991	230	650	21	53	75	10 U						
E-3	5/7/1991	190	540	19	41	66	10 U						
E-3	6/3/1991	170	520	16	40	62	10 U						
E-3	7/1/1991	250	660	23	44	95	10 U						
E-3	8/5/1991	170	520	18	38	75	10 U						
E-3	9/3/1991	140	560	20	39	53	15 U						
E-3	10/2/1991	120	390	17	34	37	10 U						
E-3	11/4/1991	130	500	17	36	39	4.0 U						
E-3	12/4/1991	110	420	16	31	41	10 U						
E-3	1/6/1992	120	460	18	33	43	10 U						
E-3	2/4/1992	87	380	13	27	46	4.0 U						
E-3	3/3/1992	82	370	12	23	40	4.0 U						
E-3	4/6/1992	110	400	18	34	59	4.0 U						
E-3	5/4/1992	83	360	14	27	40	4.0 U						
E-3	6/2/1992	73	310	11	25	32	4.0 U						
E-3	7/6/1992	72	340	11	23	37	4.0 U						
E-3	8/10/1992	71	370	11	22	44	10 U						
E-3	9/1/1992	110	530	16	30	49	20 U						
E-3	10/1/1992	110	540	17	30	48	20 U						
E-3	11/2/1992	100	510	15	27	45	20 U						
E-3	12/1/1992	76	350	11	20	37	20 U						
E-3	1/1/1993	53	250	11	19	32	2.0 U						
E-3	2/1/1993	62	360	11	21	33	10 U						
E-3	3/3/1993	74	410	14	23	43	10 U						
E-3	3/29/1993	43	280	6.9	15	26	10 U						
E-3	4/28/1993	46	310	7.7	14	29	10 U						
E-3	5/25/1993	47	310	8.6	17	37	10 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-3	6/23/1993	34	220	6.5	14	24	10 U						
E-3	7/30/1993	43	320	9.0	16	30	10 U						
E-3	8/25/1993	59	410	12	20	43	10 U						
E-3	9/29/1993	37	260	7.3	15	30	10 U						
E-3	10/27/1993	48	360	9.5	17	38	10 U						
E-3	11/22/1993	36	280	7.3	14	27	10 U						
E-3	12/27/1993	30	230	5.6	12	21	10 U						
E-3	1/26/1994	28	150	6.3	11	19	2.0 U						
E-3	2/23/1994	25	190	5.9	12	22	4.0 U						
E-3	4/4/1994	26	210	6.1	10	21	4.0 U						
E-3	4/26/1994	22 J	170	4.2	8.9	18	4.0 U						
E-3	6/29/1994	25	190	6.5	10	20	2.0 U						
E-3	10/26/1994	24	180	5.9	8.8	20	2.0 U						
E-3	12/21/1994	11	83	3.1	4.6	11	2.0 U						
E-3	3/3/1995	7.7 J	57 J	2.0	3.2	9.0	2.0 U						
E-3	6/1/1995	6.7	54	2.0	2.6	7.9	2.0 U						
E-3	8/29/1995	21	250	6.0	9.1	24	2.0 U						
E-3	11/9/1995	25	270 J	10 U	12	29 J	20 U						
E-3	3/4/1996	20	220	6.5	8.6	20	10 U						
E-3	5/31/1996	26	280	8.2	11	23	10 U						
E-3	8/26/1996	22	240	10 U	10 U	21	20 U						
E-3	11/20/1996	29	300	7.4	11	31	10 U						
E-3	3/6/1997	26	330	8.2	15	32	10 U						
E-3	5/27/1997	18	220	6.3	9.0	18	10 U						
E-3	9/2/1997	18	250	6.9	8.9	22	2.0 U						
E-3	11/3/1997	23	290	8.1	11	30	2.0 U						
E-3	2/24/1998	14	180	5.0	7.3	14	6.0 U						
E-3	5/5/1998	20 J	320	7.9	11	29	2.0 U						
E-3	8/3/1998	15	220	7.0	8.8	27	2.0 U						
E-3	11/2/1998	15	270	7.8	8.3	26	2.0 U						
E-3	2/1/1999	13	320	7.1	7.5	28	2.0 U						
E-3	5/3/1999	16	290	8.0	8.8	31	1.0 U						
E-3	8/2/1999	12	260	6.4	8.5	23	1.0 U						
E-3	11/1/1999	12	200	6.2	8.3	25	1.0 U						
E-3	2/4/2000	20	250	10	12	40	1.0 U						
E-3	5/1/2000	11	200	5.6	5.9	23	1.0 U						
E-3	8/2/2000	11	200	5.2	6.5	24	1.0 U						
E-3	11/1/2000	22	220	10	14	35	1.0 U						
E-3	2/1/2001	14	230	6.9	10	31	1.0 U						
E-3	5/1/2001	8.0	140	2.7	8.3	19	1.0 U						
E-3	8/6/2001	11	210	5.8	9.2	27	5.0 U						
E-3	11/1/2001	12	210	5.5	8.1	27	1.0 U						
E-3	2/2/2002	8.8	160	4.1	6.2	20	3.0 U						
E-3	5/8/2002	7.4	140	4.0	7.3	18	1.0 U						
E-3	8/1/2002	6.6	150	3.6	7.2	17	3.0 U						
E-3	11/4/2002	10	200	5.9	9.3	26	1.0 U						
E-3	2/4/2003	5.5	93	3.0	5.6	12	1.0 U						
E-3	5/7/2003	4.9	79	2.8	5.8	12	1.0 U						
E-3	8/6/2003	7.5	160	5.2	7.8	18	1.0 U						
E-3	11/5/2003	10	190	5.3	9.1	28	1.0 U						
E-3	2/3/2004	3.9	120	3.6	5.8	14	1.0 U						
E-3	5/6/2004	5.3	130	3.7	7.4	20	1.0 U						
E-3	8/3/2004	5.8	140	4.1	7.7	18	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-3	11/1/2004	5.7	160	4.4	8.3	22	1.0 U						
E-3	2/3/2005	4.4	130	3.7	5.9	14	1.0 U						
E-3	5/3/2005	4.6	98	3.2	5.6	12	1.0 U						
E-3	8/2/2005	3.4	100	3.6	5.3	14	1.0 U						
E-3	12/16/2005	3.5	78	2.6	5.1	10	1.0 U						
E-3	2/7/2006	3.2	78	2.4	4.2	9.5	1.0 U						
E-3	5/9/2006	2.3	65	2.3	4.2	7.5	1.0 U						
E-3	8/8/2006	2.8	76	1.5	4.9	7.5	1.0 U						
E-3	11/9/2006	3.2	110	3.0	5.3	12	1.0 U						
E-3	2/7/2007	2.6	67	2.6	4.2	6.9	1.0 U						
E-3	5/10/2007	3.3	93	2.6	5.4	11	1.0 U						
E-3	8/13/2007	2.6	86	2.5	4.4	10	1.0 U						
E-3	2/14/2008	2.2	73	2.5	4.1	10	1.0 U	2.32	9.8	1.5 U			
E-3	5/12/2008	2.4	72	2.7	4.7	10	1.0 U						
E-3	8/12/2008	1.8	63	2.2	3.6	6.5	1.0 U						
E-3	11/7/2008	2.5	71	2.6	4.4	9.0	0.5 U						
E-3-85	11/7/2008	1.2	43	1.0 U	3.0	4.7	1.0 U						
E-3-85	11/7/2008	1.4	49	1.2	2.8	4.6	1.0 U						
E-3-96	11/7/2008	2.2	78	1.0 U	4.6	9.5	1.0 U						
E-3-96	11/7/2008	2.5	79	2.0	4.7	9.3	0.5 U						
E-3-107	11/7/2008	2.0	60	1.0 U	3.9	8.3	1.0 U						
E-3-107	11/7/2008	2.3	66	1.5	3.7	8.0	0.5 U						
E-3-Dup-107	11/7/2008	2.3	65	1.5	3.5	8.0	0.5 U						
E-3-118	11/7/2008	2.2	61	1.0 U	4.1	8.5	1.0 U						
E-3-118	11/7/2008	2.5	69	2.2	3.9	8.3	0.5 U						
E-3	2/11/2009	2.0	34	1.4	32	7.7	1.0 U	0.1 U	2.1	54.4			
E-3	5/6/2009	1.0 U	18	1.0 U	5.9	2.6	1.0 U	2.6	11.6	1.5 U			
E-3	8/6/2009	1.0 U	20	1.0 U	9.2	3.4	1.0 U	2.4 J	10.1	1.5 U	0.7 U	1.2 U	1.1 U
E-3	11/4/2009	1.2	23	1.1	11	4.4	2.3 J	2.2	8.5	1.5 U			
E-3	2/2/2010	1.0 U	11	1.0 U	1.8	1.6	2.8	6.4	12.8	14.8			
E-3	5/5/2010	1.0 U	14	1.0 U	2.3	2.1	1.2	2.3	9.8	1.5 U			
E-3	8/9/2010	1.3	35	1.5	3.9	4.8	3.5 J	1.9	9.5	2.85	4160	1.2 U	1.1 U
E-3	11/15/2010	1.0	35	1.4	3.1	4.3	2.6	1.8	9.9	1.5 U			
E-3	1/31/2011	1.0 U	24	1.0 U	2.4	3.1	1.1	1.8	9.4	1.5 U	0.7 U	1.2 U	1.1 U
E-3	5/2/2011	1.0 U	38	1.4	2.7	4.8	2.0	0.8	9.6	1.5 U	3940	1.2 U	1.1 U
E-3	8/2/2011	1.0 U	40	1.4	2.8	5.1	2.4	0.6	8.6	1.5 U	6520	1.2 U	1.1 U
E-3	10/31/2011	1.0 U	30	1.0	2.8	3.8	3.2	1.0	9.0	1.5 U	4770	1.2 U	1.1 U
E-3	2/7/2012	1.0 U	12	1.0 U	2.1	1.4	2.4	0.2	8.6	1.5 U	8530	1.2 U	1.1 U
E-3	5/7/2012	1.0 U	19	1.0 U	2.1	2.8	1.6	0.8	9.5	1.65	7590	1.2 U	1.1 U
E-3	8/8/2012	1.0 U	22	1.0 U	2.9	2.5	2.0	0.6	9.1	3.18	5150	1.2 U	1.1 U
E-3	11/7/2012	0.5 U	26	1.0	4.1	4.2	3.1	0.72	9.1	1.0 U	1800	5.0 U	5.0 U
E-3	2/8/2013	0.5 U	30	0.7	6.1	5.1	8.2	0.1 U	4.4	1.0	12000	5.0 U	5.0 U
E-3	5/2/2013	0.5 U	21	0.7	3.7	2.5	3.4	0.16	7.2	1.0 U	6200	5.0 U	5.0 U
E-3	8/2/2013	0.5 U	17	0.7	3.5	2.2	4.0	0.16	5.9	1.3	4600	5.0 U	5.0 U
E-3	11/12/2013	0.5 U	18	0.7	3.1	2.1	1.8	1.1	8.3	1.0 U	1900	5.0 U	5.0 U
E-3	8/14/2014	0.5 U	10	0.7	2.5	1.3	1.2	0.10 U	9.1	8.3	3100	5.0 U	5.0 U
E-3	11/3/2014	0.5 U	15	0.7	4.0	2.0	1.5	0.95 J	7.6	1.2	2100	5.0 U	5.0 U
E-3	2/4/2015	0.5 U	10	0.8	2.3	1.1	0.5	1.1	8.3	1.0 U	1500	5.0 U	5.0 U
E-3	5/7/2015	0.5 U	9.2	0.6	2.3	1.1	0.6	1.1	8.0	1.0 U	2300	5.0 U	5.0 U
E-3	7/10/2015	0.5 U	8.2	0.2 U	5.0	1.3	4.1			428			
E-3	8/5/2015	0.5 U	2.0	0.2 U	5.6	0.9	4.4	0.10 U	1.0 U	175	28000	5.0 U	5.0 U
E-3	11/6/2015	0.5 U	3.6	0.2 U	7.1	1.2	4.1	0.10 U	1.0 U	1.8	33000	5.0 U	5.0 U
E-3	2/5/2016	0.5 U	1.2	0.2 U	3.6	0.6	3.5	0.1 U	1 U	8.0	30000	5.0 U	5.0 U

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-3	5/5/2016	0.5 U	2.1	0.2 U	3.2	0.6	2.9	0.10 U	1.1	1.0 U	32000	5.0 U	5.0 U
E-3	8/10/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	1.5	1.6	38000	9.3	5.0 U
E-3	11/7/2016	0.5 U	9.2	0.2 U	4.0	1.4	2.3 J	0.10 U	1.0 U	2.5	31000	5.1	5.0 U
E-4	3/28/1989	270	590	26	29	210							
E-4	4/6/1989	250	440	26 B	33 B	200							
E-4	4/12/1989	230	540		34	160							
E-4	4/18/1989	240	640	27	38	200							
E-4	4/25/1989	220	580	25	38	180							
E-4	5/2/1989	250	610	35	40	200							
E-4	5/9/1989	210	540	25	31	170							
E-4	5/16/1989	270	600	30	39	210							
E-4	5/23/1989	230	530	30	30	170							
E-4	5/30/1989	240	500	27	35	170							
E-4	6/7/1989	240	530	28	29	170							
E-4	6/13/1989	220	530	28	32	190							
E-4	6/20/1989	250	520	26	34	200							
E-4	6/27/1989	190	490	23	25	150							
E-4	7/5/1989	230	510	26	26	170							
E-4	7/11/1989	230	470	23	29	180							
E-4	7/18/1989	240	520	28	29	210							
E-4	7/25/1989	230	510	25	26	200							
E-4	8/1/1989	220	530	32	25	200							
E-4	8/8/1989	260	460	24	44	210							
E-4	8/15/1989	220	490	34	39	170							
E-4	8/22/1989	260	450	32	28	300							
E-4	8/29/1989	290	600	34	49	240							
E-4	9/5/1989	300	690	37	51	250							
E-4	9/12/1989	280	650	37	64	250							
E-4	9/26/1989	300	690	37	48	240							
E-4	10/3/1989	270	610	31	42	250							
E-4	10/10/1989	250	590	31	40	220							
E-4	10/17/1989	270	650	32	49	260							
E-4	10/24/1989	53	130	6.3	8.4	44							
E-4	11/15/1989	200	540	25	36	190							
E-4	11/21/1989	280	630	27	38	220							
E-4	11/28/1989	250	620	28	34	230							
E-4	12/5/1989	270	650	30	32	230							
E-4	12/12/1989	250	620	29	34	210							
E-4	12/19/1989	230	580	26	36	160							
E-4	1/4/1990	230	560	25	36	180							
E-4	1/17/1990	290	650	29	37	240							
E-4	1/31/1990	250	520	61	30	210							
E-4	2/14/1990	210	440	17	28	200							
E-4	2/28/1990	210	500	26	23	160							
E-4	3/14/1990	200	570	28	21	320							
E-4	3/28/1990	180	530	19	22	260							
E-4	4/11/1990	170	540	24	20	260							
E-4	4/25/1990	140	460	19	16	220							
E-4	5/8/1990	160	460	20	19	280							
E-4	5/22/1990	160	510	21	19	270							
E-4	6/6/1990	130	470	22	15	250							
E-4	6/19/1990	130	440	18	14	220							

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-4	7/3/1990	120	400	17	14	260							
E-4	7/17/1990	130	410	16	15	250							
E-4	7/31/1990	120	410	16	13	270							
E-4	8/14/1990	100	380 B	13	15	200							
E-4	8/28/1990	130	400	26	16	210							
E-4	9/11/1990	85	320	13	12	190							
E-4	9/27/1990	100	400	17	14	240							
E-4	10/9/1990	120	420	16	13	260							
E-4	10/29/1990	110	370	16	13	250							
E-4	11/14/1990	110	370	14	11	230							
E-4	11/28/1990	120	400	16	15	250							
E-4	12/11/1990	100	370	14	17	210							
E-4	1/2/1991	18	63	2.8	2.2	40	3.0 U						
E-4	1/15/1991	92	330	15	12	210	15 U						
E-4	2/5/1991	84	310	12	13	200	15 U						
E-4	3/5/1991	75	260	11	9.3	160	15 U						
E-4	4/2/1991	96	340	14	12	260	10 U						
E-4	5/7/1991	68	270	11	8.0	180	10 U						
E-4	6/3/1991	76	290	12	9.1	210	10 U						
E-4	7/1/1991	84	300	13	7.5	230	10 U						
E-4	8/5/1991	66	270	11	7.6	190	10 U						
E-4	9/3/1991	55	230	11	7.6	119	15 U						
E-4	10/2/1991	61	240	13	7.1	120	10 U						
E-4	11/4/1991	78	330	14	10	140	4.0 U						
E-4	12/4/1991	55	240	11	6.9	120	4.0 U						
E-4	1/6/1992	50	220	11	6.4	110	4.0 U						
E-4	2/4/1992	54	250	11	6.6	130	4.0 U						
E-4	3/3/1992	38	180	7.4	4.9	97	4.0 U						
E-4	4/6/1992	52	230	12	6.9	150	4.0 U						
E-4	5/4/1992	42	210	9.3	5.2	92	4.0 U						
E-4	6/2/1992	37	170	7.6	4.6	92	4.0 U						
E-4	7/6/1992	44	220	9.4	5.3	110	4.0 U						
E-4	8/10/1992	48	240	10	5.4	140	10 U						
E-4	9/1/1992	55	280	11	6.1	140	10 U						
E-4	10/1/1992	60	350	14	6.5	150	10 U						
E-4	11/2/1992	52	280	11	5.4	140	10 U						
E-4	12/1/1992	45	240	11	5.1	130	4.0 U						
E-4	1/1/1993	42	200	9.5	4.4	110	4.0 U						
E-4	2/1/1993	45	260	9.7	5.4	130	4.0 U						
E-4	3/3/1993	48	270	11	5.6	130	4.0 U						
E-4	3/29/1993	32	190	6.5 M	3.5 J	98	10 U						
E-4	4/28/1993	38	230	7.6	3.2 J	110	10 U						
E-4	5/25/1993	37	230	8.2	4.2 J	140	10 U						
E-4	6/23/1993	31	180	6.8	3.8 J	93	10 U						
E-4	7/30/1993	26	160	5.7	5.0 U	79	10 U						
E-4	8/25/1993	30	200	7.4	4.1 J	100	10 U						
E-4	9/29/1993	31	200	6.7	3.1 J	97	10 U						
E-4	10/27/1993	33	210	8.2	4.3	110	2.0 U						
E-4	11/22/1993	32	190	8.5	4.3	99	2.0 U						
E-4	12/27/1993	31	210	7.4	3.7	81	4.0 U						
E-4	1/26/1994	31	210	7.8	4.1	100	4.0 U						
E-4	2/23/1994	26	190	7.1	4.3	88	4.0 U						
E-4	4/4/1994	22	160	6.3	3.1	73	2.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-4	4/26/1994	23 J	150	5.3	3.0	66	2.0 U						
E-4	6/29/1994	26	170	7.2	3.3	86	2.0 U						
E-4	10/26/1994	35	270	12	5.0	130	2.0 U						
E-4	12/21/1994	27	170	7.9	3.9	82	2.0 U						
E-4	3/3/1995	24 J	180 J	6.6	3.1	74	2.0 U						
E-4	6/1/1995	19	160	6.2	5.0 U	68	10 U						
E-4	8/29/1995	28	200	7.4	3.4	96	2.0 U						
E-4	11/9/1995	23	180	6.3	3.5	82	2.0 U						
E-4	3/4/1996	16	130	5.5	2.5	64	2.0 U						
E-4	5/31/1996	21	200	7.5	3.6	78	2.0 U						
E-4	8/26/1996	17	160	5.7	5.0 U	59	10 U						
E-4	11/20/1996	17	180	6.8	3.9	73	2.0 U						
E-4	3/6/1997	16	160	5.8	3.3	67	2.0 U						
E-4	5/27/1997	18	200	7.0	3.4	73	2.0 U						
E-4	9/2/1997	14	160	6.0	3.2	57	2.0 U						
E-4	11/3/1997	17	160	6.8	3.5	75	2.0 U						
E-4	2/24/1998	13	160	5.0	2.9	56	2.0 U						
E-4	5/5/1998	15 J	160	6.6	2.8	70	2.0 U						
E-4	8/3/1998	11	150	5.2	2.6	56	2.0 U						
E-4	11/2/1998	17	180	7.1	3.2	99	2.0 U						
E-4	2/1/1999	13 J	120 J	7.3 J	3.1	78 J	2.0 U						
E-4	5/3/1999	12	180	6.0	2.1	76	1.0 U						
E-4	8/2/1999	7.8	150	4.8	1.9	45	1.0 U						
E-4	11/1/1999	7.8	120	4.8	1.8	48	1.0 U						
E-4	2/4/2000	14	200	7.9	3.2	60	1.0 U						
E-4	5/1/2000	8.5	120	4.4	1.8	54	1.0 U						
E-4	8/2/2000	9.4	150	5.1	2.1	59	1.0 U						
E-4	11/1/2000	12	140	7.3	3.3	64	1.0 U						
E-4	2/1/2001	14	200	7.8	3.7	71	1.0 U						
E-4	5/1/2001	7.2	130	3.4	3.0	43	1.0 U						
E-4	8/6/2001	11	200	7.4	5.0 U	76	5.0 U						
E-4	11/1/2001	13	220	7.1	3.6	81	1.0 U						
E-4	2/2/2002	8.5	150	4.7	3.0 U	42	3.0 U						
E-4	5/8/2002	5.8	130	4.4	1.8	45	1.0 U						
E-4	8/1/2002	9.2	200	6.7	3.4	62	3.0 U						
E-4	11/4/2002	10	240	8.4	5.0	63	1.0 U						
E-4	2/4/2003	8.1	150	5.7	2.6	56	1.0 U						
E-4	5/7/2003	4.3	86	3.4	1.4	30	1.0 U						
E-4	8/6/2003	7.8	170	6.5	2.8	50	1.0 U						
E-4	11/5/2003	11	250	7.2	3.6	78	3.0 U						
E-4	2/3/2004	5.2	160	6.1	2.8	57	1.0 U						
E-4	5/6/2004	5.5	160	5.0	2.5	61	1.0 U						
E-4	8/3/2004	6.5	180	6.2	2.7	59	1.0 U						
E-4	11/1/2004	6.7	180	6.7	2.9	86	1.0 U						
E-4	2/3/2005	4.7	150	4.8	2.3	43	1.0 U						
E-4	5/3/2005	5.0	140	4.7	2.3	42	1.0 U						
E-4	8/2/2005	3.9	120	4.6	2.1	44	1.0 U						
E-4	12/16/2005	4.9	140	5.1	2.5	47	1.0 U						
E-4	2/7/2006	3.6	110	3.4	1.6	30	1.0 U						
E-4	5/9/2006	2.6	97	3.4	1.4	28	1.0 U						
E-4	8/8/2006	3.6	160	1.5	2.2	22	1.0 U						
E-4	11/9/2006	6.5	200	8.7	3.5	50	0.2 U						
E-4	2/7/2007	3.4	100	4.5	2.3	19	0.2 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-4	5/10/2007	3.3	120	4.2	2.0	36	1.0 U						
E-4	8/13/2007	3.9	170	4.7	2.6	41	1.0 U						
E-4	11/7/2007	3.4	140	5.1	2.4	47	1.0 U						
E-4	2/14/2008	2.2	92	3.4	1.5	29	1.0 U	2.21	9.6	1.5 U			
E-4	5/12/2008	2.6	120	4.2	1.6	34	1.0 U						
E-4	8/12/2008	2.9	170	4.9	2.3	35	1.0 U						
E-4	11/5/2008	4.0	260	9.1	3.0 U	54	3.0 U						
E-4	2/3/2009	1.0 U	260	7.4	3.0	43	1.0 U	0.1 U	5.7	3.18			
E-4	5/6/2009	1.3	66	2.2	1.0 U	18	1.0 U	2.8	9.3	1.5 U			
E-4	8/6/2009	1.4	86	2.8	1.1	22	1.0 U	2.4 J	8.9	1.5 U	25	1.2 U	1.1 U
E-4	11/4/2009	1.6	85	3.1	1.3	23	1.0 U	2.9	9.1	1.5 U			
E-4	2/2/2010	1.9	100	3.3	1.5	16	1.0 U	7.2	11.8	11.4			
E-4	5/5/2010	1.6	100	3.3	1.7	10	1.0 U	2.7	8.6	4.06			
E-4	8/9/2010	3.0 U	79	3.0 U	3.0 U	14	3.0 U	2.9	9.1	1.57	7.9	1.2 U	1.1 U
E-4	11/15/2010	3.0 U	95	3.1	3.0 U	17	3.0 U	2.9	9.2	1.5 U			
E-4	1/31/2011	1.0 U	55	1.8	1.0	9.5	1.0 U	3.1	8.7	1.5 U	0.7 U	1.2 U	1.1 U
E-4	5/2/2011	1.0 U	52	1.8	1.0 U	8.4	1.0 U	2.4	9.0	1.5 U	0.7 U	1.2 U	1.1 U
E-4	8/2/2011	1.0 U	56	1.9	1.0 U	9.5	1.0 U	2.3	9.2	1.5 U	0.7 U	1.2 U	1.1 U
E-4	11/10/2011	1.0 U	41	1.6	1.0 U	4.9	1.0 U	2.4	9.8	1.5 U	0.7 U	1.2 U	1.1 U
E-4	2/7/2012	1.0 U	56	2.0	1.1	9.0	1.0 U	1.9	10	1.5 U	0.7 U	1.2 U	1.1 U
E-4	5/7/2012	1.0 U	45	1.8	1.0 U	6.8	1.0 U	1.8	9.6	1.22	0.7 U	1.2 U	1.1 U
E-4	8/8/2012	1.0 U	45	1.7	1.0 U	6.7	1.0 U	1.7	10	2.81	3.7	1.2 U	1.1 U
E-4	11/7/2012	0.5 U	48	2.0	1.1	10	0.2 U	2.0	10.4	1.0 U	5.0 U	5.0 U	5.0 U
E-4	2/8/2013	0.5 U	38	1.6	1.0	7.0	0.2 U	1.5	9.8	1.0 U	18	5.0 U	5.0 U
E-4	5/9/2013	0.5 U	29	1.4	0.7	5.1	0.2 U	1.2	8.7	1.0 U	5.0 U	5.0 U	5.0 U
E-4	8/2/2013	0.5 U	28	1.5	0.8	5.3	0.2 U	1.3	8.5	1.0 U	24	5.0 U	5.0 U
E-4	11/12/2013	0.5 U	35	1.8	1.0	6.9	0.2 U	1.5	9.0	1.0 U	5.0 U	5.0 U	5.0 U
E-4	8/14/2014	0.5 U	25	1.3	1.0	5.1	0.2 U	1.5	8.5	1.2	15	5.0 U	5.0 U
E-4	11/5/2014	0.5 U	28	1.5	1.5	6.3	0.2 U	1.4	8.3	1.0 U	5.0 U	5.0 U	5.0 U
E-4	2/4/2015	0.5 U	25	1.3	1.4	4.5	0.2 U	1.3	8.3	1.0 U	5.0 U	5.0 U	5.0 U
E-4	5/7/2015	0.5 U	18	0.9	1.3	4.1	0.2 U	1.4	8.1	1.0 U	11	5.0 U	5.0 U
E-4	8/5/2015	0.5 U	21	1.0	1.3	4.0	0.2 U	1.1	7.5	1.0 U	18	5.0 U	5.0 U
E-4	11/9/2015	1.2	200	7.4	7.0	28	0.5	0.77	9.2	1.0 U	120	5.0 U	5.0 U
E-4	2/4/2016	0.5 U	26	1.2	2.1	4.9	0.2 U	0.78	6.9	1 U	7.2	5 U	5 U
E-4	5/5/2016	0.5 U	21	1.2	1.6	4.2	0.2 U	0.88	7.6	1.0 U	99	5.0 U	5.0 U
E-4	8/10/2016	0.5 U	21	0.8	1.3	2.9	0.2 U	1.0	7.6	1.0 U	30	5.0 U	5.0 U
E-4	11/7/2016	0.5 U	22	1.1	1.8	5.0	0.2 UJ	0.90	6.6	1.3	45	5.0 U	5.0 U
E-12	12/21/1994	14	53	1.7	5.2	5.2	2.0 U						
E-12	4/11/1995	12	47	1.6	3.5	5.6	2.0 U						
E-12	4/19/1995	15	71	2.2	4.8	6.4	2.0 U						
E-12	4/27/1995	15	82	2.9	5.3	6.7	2.0 U						
E-12	6/29/1995	14	74	2.6	5.9	6.8	2.0 U						
E-12	7/27/1995	9.7	58	2.0	4.0	4.6	2.0 U						
E-12	8/29/1995	9.8	59	2.0	4.4	4.7	2.0 U						
E-12	11/9/1995	8.1	52	1.6	4.7	5.3	2.0 U						
E-12	3/4/1996	5.9	43	1.5	2.8	3.3	2.0 U						
E-12	5/31/1996	5.3	42	1.3	2.8	2.8	2.0 U						
E-12	8/26/1996	5.0	35	1.1	2.5	2.6	2.0 U						
E-12	11/20/1996	5.0	40	1.4	2.8	2.8	2.0 U						
E-12	3/6/1997	3.6	36	1.2	2.9	2.6	2.0 U						
E-12	5/27/1997	2.8	26	1.0 U	1.8	1.6	2.0 U						
E-12	9/2/1997	3.3	34	1.3	2.2	2.0	2.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-12	11/3/1997	3.0	37	1.0 U	2.4	2.0	2.0 U						
E-12	2/24/1998	2.4	23	1.0 U	1.7	1.3	2.0 U						
E-12	5/5/1998	1.9 J	22	1.0 U	1.5	1.0 U	2.0 U						
E-12	8/3/1998	1.9	21	1.0 U	1.4	1.5	2.0 U						
E-12	11/2/1998	1.0 U	25	1.0 U	1.9	1.7	2.0 U						
E-12	2/1/1999	1.0 U	21	1.0 U	1.1	1.3	2.0 U						
E-12	5/3/1999	1.0 U	17	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/2/1999	1.0 U	14	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/1/1999	1.0 U	11	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/4/2000	1.0 U	12	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/1/2000	1.0 U	10	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/2/2000	1.0 U	9.3	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/1/2000	1.0 U	9.5	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/1/2001	1.0 U	10	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/1/2001	1.0 U	9.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/6/2001	1.0 U	9.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/1/2001	1.0 U	8.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/2/2002	1.0 U	7.5	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/8/2002	1.0 U	8.2	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/1/2002	1.0 U	8.4	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/4/2002	1.0 U	8.3	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/4/2003	1.0 U	8.1	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/7/2003	1.0 U	7.4	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/6/2003	1.0 U	7.8	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/5/2003	1.0 U	8.5	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/3/2004	1.0 U	6.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/6/2004	1.0 U	6.4	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/3/2004	1.0 U	6.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/1/2004	1.0 U	5.9	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/3/2005	1.0 U	4.9	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/3/2005	1.0 U	5.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/2/2005	1.0 U	4.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	12/16/2005	1.0 U	5.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/7/2006	1.0 U	5.4	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/9/2006	1.0 U	4.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/8/2006	1.0 U	5.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/9/2006	0.2	6.0	0.2	0.2	0.4	0.2 U						
E-12	2/7/2007	0.2	6.2	0.2	0.3	0.4	0.2 U						
E-12	5/11/2007	0.4	5.0	0.2 U	0.2	0.4	0.2 U						
E-12	8/13/2007	0.2	4.8	0.2 U	0.2 U	0.4	0.2 U						
E-12	11/7/2007	0.2	5.0	0.2 U	0.2	0.4	0.2 U						
E-12	2/12/2008	1.0 U	4.4	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	5/12/2008	1.0 U	5.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/12/2008	1.0 U	4.8	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/7/2008	0.2	4.0	0.2 U	0.2	0.4	0.2 U						
E-12-123	11/7/2008	0.2	5.1	0.2 U	0.3	0.5	0.2 U						
E-12-136	11/7/2008	0.3	5.8	0.2 U	0.4	0.6	0.2 U						
E-12-149	11/7/2008	0.2	5.1	0.2 U	0.3	0.6	0.2 U						
E-12-161	11/7/2008	0.3	7.8	0.2 U	0.5	0.8	0.2 U						
E-12-123	11/7/2008	0.5 U	5.8 U	0.5 U	0.5 U	0.54	0.5 U						
E-12-136	11/7/2008	0.5 U	6.8	0.5 U	0.5 U	0.6	0.5 U						
E-12-149	11/7/2008	0.5 U	5.8	0.5 U	0.5 U	0.55	0.5 U						
E-12-161	11/7/2008	0.5 U	9.7	0.5 U	0.5 U	0.77	0.5 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-12	2/3/2009	1.0 U	5.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/6/2009	1.0 U	5.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/2/2010	1.0 U	5.9	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/11/2010	1.0 U	5.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/3/2011	1.0 U	5.8	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/3/2011	1.0 U	6.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	2/3/2012	1.0 U	5.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	8/8/2012	1.0 U	6.1	1.0 U	1.0 U	1.0 U	1.0 U						
E-12	11/7/2012	0.5 U	7.3	0.3	0.4	0.9	0.2 U	3.1	12	1.0 U	72	5.0 U	5.0 U
E-12	2/4/2013	0.5 U	9.1	0.4	0.4	1.1	0.2 U						
E-12	5/2/2013	0.5 U	10	0.4	0.4	1.1	0.2 U	2.9	12	1.0 U	300	5.0 U	5.0 U
E-12	8/2/2013	0.5 U	11	0.4	0.4	1.2	0.2 U						
E-12	11/12/2013	0.5 U	11	0.4	0.4	1.1	0.2 U	2.9	11.2	1.0 U	78	5.0 U	5.0 U
E-12	8/14/2014	0.5 U	11	0.4	0.8	1.3	0.2 U						
E-12	11/11/2014	0.5 U	9.4	0.4	0.5	1.1	0.2 U	2.4	11.9	1.0 U	340	5.0 U	5.0 U
E-12	2/4/2015	0.5 U	8.7	0.3	0.4	1.0	0.2 U						
E-12	5/7/2015	0.5 U	11	0.4	0.5	1.3	0.2 U						
E-12	8/5/2015	0.5 U	13	0.4	2.2	1.5	0.4						
E-12	11/5/2015	0.5 U	19	0.6	1.7	1.9	0.3	1.3	11.2	1.0 U	3600	5.0 U	5.0 U
E-12	2/5/2016	0.5 U	16	0.5	1.5	1.6	0.3						
E-12	5/3/2016	0.5 U	16	0.6	1.6	1.7	0.2						
E-12	8/10/2016	0.5 U	17	0.6	1.6	2.1	0.2 U						
E-12	11/7/2016	0.5 U	17	0.5	2.0	2.0	0.2 UJ	1.8	9.9	1.1	1400	5.0 U	5.0 U
E-13	12/22/1994	2.0	12	1.0 U	1.0 U	1.9	2.0 U						
E-13	12/22/1994	2.0	11	1.0 U	1.0 U	1.0 U	2.0 U						
E-13	4/11/1995	1.7	12	1.0 U	1.0 U	1.9	2.0 U						
E-13	4/19/1995	4.3	24	1.0 U	1.2	4.9	2.0 U						
E-13	4/27/1995	12	53	2.0	3.3	6.5	2.0 U						
E-13	6/29/1995	13	57	2.0	4.8	7.1	2.0 U						
E-13	7/27/1995	11	50	1.9	4.4	6.3	2.0 U						
E-13	8/29/1995	15	63	2.1	5.3	7.7	2.0 U						
E-13	11/9/1995	10	55	1.8	5.0	6.5	2.0 U						
E-13	3/4/1996	4.9	32	1.1	2.1	4.2	2.0 U						
E-13	5/31/1996	4.4	34	1.1	2.6	3.3	2.0 U						
E-13	8/26/1996	4.9	36	1.2	3.3	3.8	2.0 U						
E-13	11/20/1996	4.2	38	1.3	3.3	4.0	2.0 U						
E-13	3/6/1997	2.8	31	1.0 U	2.9	3.5	2.0 U						
E-13	5/27/1997	2.7	30	1.1	2.6	2.7	2.0 U						
E-13	9/2/1997	2.2	29	1.0 U	2.7	2.3	2.0 U						
E-13	11/3/1997	2.7	35	1.3	3.2	3.0	2.0 U						
E-13	2/24/1998	1.5	18	1.0 U	1.0	1.7	2.0 U						
E-13	5/5/1998	1.6 J	21	1.0 U	1.2	1.9	2.0 U						
E-13	8/3/1998	1.4	16	1.0 U	1.1	1.8	2.0 U						
E-13	11/2/1998	1.0 U	22	1.0 U	1.0 U	2.3	2.0 U						
E-13	1/20/1999	1.4	19	1.0 U	1.0	2.2	2.0 U						
E-13	2/1/1999	1.0 U	21	1.0 U	1.0	2.6	2.0 U						
E-13	3/2/1999	1.0 U	15	1.0 U	1.0 U	1.5	2.0 U						
E-13	5/3/1999	1.0 U	19	1.0 U	1.0 U	2.2	1.0 U						
E-13	8/2/1999	1.3	22	1.0 U	1.0 U	2.0	1.0 U						
E-13	11/1/1999	1.2	18	1.0 U	1.0 U	1.9	1.0 U						
E-13	2/4/2000	1.5	20	1.0 U	1 J	2.3	1.0 U						
E-13	5/1/2000	1.4	16	1.0 U	1.0 U	1.8	1.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-13	8/2/2000	1.4	16	1.0 U	1.0 U	2.0	1.0 U						
E-13	11/1/2000	1.0 U	9.1	1.0 U	1.0 U	1.0	1.0 U						
E-13	2/1/2001	1.2	15	1.0 U	1.0 U	1.6	1.0 U						
E-13	5/1/2001	1.0 U	14	1.0 U	1.0 U	1.7	1.0 U						
E-13	8/6/2001	1.0 U	8.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	11/1/2001	1.0 U	13	1.0 U	1.0 U	1.7	1.0 U						
E-13	2/2/2002	1.0 U	9.6	1.0 U	1.0 U	1.4	1.0 U						
E-13	5/8/2002	1.0 U	11	1.0 U	1.0 U	1.4	1.0 U						
E-13	8/1/2002	1.0 U	9.2	1.0 U	1.0 U	1.2	1.0 U						
E-13	11/4/2002	0.5	10	0.3	0.4	1.4	0.2 U						
E-13	2/4/2003	1.0 U	5.9	1.0 U	1.0 U	1.2	1.0 U						
E-13	5/7/2003	1.0 U	6.9	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	8/6/2003	1.0 U	8.4	1.0 U	1.0 U	1.2	1.0 U						
E-13	11/5/2003	1.0 U	7.6	1.0 U	1.0 U	1.5	1.0 U						
E-13	2/3/2004	1.0 U	5.6	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	5/6/2004	1.0 U	6.5	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	8/3/2004	1.0 U	6.7	1.0 U	1.0 U	1.1	1.0 U						
E-13	11/1/2004	1.0 U	6.5	1.0 U	1.0 U	1.0	1.0 U						
E-13	2/3/2005	1.0 U	5.2	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	5/3/2005	1.0 U	4.3	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	8/2/2005	1.0 U	4.7	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	12/16/2005	1.0 U	4.8	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	2/7/2006	1.0 U	4.2	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	5/9/2006	1.0 U	6.0	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	8/8/2006	1.0 U	6.3	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	11/9/2006	0.3	6.9	0.3	0.2 U	1.4	0.2 U						
E-13	2/7/2007	0.2 U	5.5	0.2	0.2	0.8	0.2 U						
E-13	5/11/2007	0.2 U	4.3	0.2 U	0.2 U	0.7	0.2 U						
E-13	8/10/2007	0.2 U	5.1	0.2 U	0.2 U	1.0	0.2 U						
E-13	11/7/2007	0.2 U	4.1	0.2 U	0.2 U	1.0	0.2 U						
E-13	2/12/2008	1.0 U	2.9	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	5/12/2008	1.0 U	5.6	1.0 U	1.0 U	1.1	1.0 U						
E-13	8/7/2008	1.0 U	5.1	1.0 U	1.0 U	1.0 U	1.0 U						
E-13	11/5/2008	0.3	7.6	0.3	0.3	1.5	0.2 U						
E-13	2/3/2009	1.0 U	11	1.0 U	1.0 U	1.7	1.0 U						
E-13	8/6/2009	1.0 U	7.8	1.0 U	1.0 U	1.5	1.0 U						
E-13	2/2/2010	1.0 U	5.5	1.0 U	1.0 U	1.2	1.0 U						
E-13	8/11/2010	1.0 U	6.4	1.0 U	1.0 U	1.2	1.0 U						
E-13	2/3/2011	1.0 U	7.2	1.0 U	1.0 U	1.4	1.0 U						
E-13	8/3/2011	1.0 U	7.6	1.0 U	1.0 U	1.3	1.0 U						
E-13	2/3/2012	1.0 U	7.7	1.0 U	1.0 U	1.5	1.0 U						
E-13	8/8/2012	1.0 U	7.9	1.0 U	1.0 U	1.3	1.0 U						
E-13	11/7/2012	0.5 U	7.8	0.3	0.4	1.5	0.2 U	2.6	10.1	1.0 U	5.0 U	5.0 U	5.0 U
E-13	2/4/2013	0.5 U	11	0.4	0.5	1.9	0.2 U						
E-13	5/2/2013	0.5 U	9.7	0.4	0.5	1.9	0.2 U	2.8	9.8	1.0 U	5.0 U	5.0 U	5.0 U
E-13	8/2/2013	0.5 U	9.3	0.4	0.7	2.0	0.2 U						
E-13	11/12/2013	0.5 U	7.8	0.3	0.7	1.6	0.2 U	2.5	9.2	1.0 U	5.0 U	5.0 U	5.0 U
E-13	8/14/2014	0.5 U	8.4	0.4	0.9	1.7	0.2 U						
E-13	11/5/2014	0.5 U	12	0.4	1.4	2.3	0.2 U	2.6	9.3	1.0 U	5.0 U	5.0 U	5.0 U
E-13	2/5/2015	0.5 U	12	0.5	1.4	2.6	0.2 U						
E-13	5/7/2015	0.5 U	16	0.5	1.7	3.3	0.2 U						
E-13	8/7/2015	0.5 U	12	0.5	2.2	2.9	0.2 U						
E-13	11/5/2015	0.5 U	11	0.4	1.3	2.1	0.2 U	2.4	10.1	1.0 U	72	5.0 U	5.0 U

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
E-13	2/1/2016	0.5 U	13	0.4	1.6	2.5	0.2 U						
E-13	5/3/2016	0.5 U	11	0.4	1.2	2.3	0.2 U						
E-13	8/4/2016	0.5 U	12	0.4	1.4	2.6	0.2 U						
E-13	11/7/2016	0.5 U	10	0.4	1.3	2.2	0.2 UJ	2.3	8.9	2.2	65	5.0 U	5.0 U
Former Vapor Degreaser Source Area Wells													
BOP-72i-55	2/4/2010	1.0 U	20	1.0 U	3.7	2.1	1.0 U						
BOP-72i-61	2/4/2010	1.0 U	49	1.0 U	5.6	4.2	1.0 U						
BOP-72i-67	2/4/2010	1.0 U	48	1.2	5.4	3.8	1.0 U						
BOP-72i-73	2/4/2010	1.0 U	37	1.0 U	4.8	3.3	1.0 U						
BOP-72i-78	2/4/2010	1.0 U	4.5	1.0 U	1.1	1.0 U	1.0 U						
BOP-72i-55	5/1/2010	1.0 U	24	1.0 U	17	3.2	1.0 U						
BOP-72i-61	5/1/2010	1.0 U	30	1.0 U	15	3.7	1.0 U						
BOP-72i-67	5/1/2010	1.0 U	28	1.0 U	13	3.5	1.0 U						
BOP-72i-73	5/1/2010	1.0 U	18	1.0 U	24	3.6	1.0 U						
BOP-72i-78	5/1/2010	1.0 U	1.0 U	1.0 U	24	1.6	1.0 U						
BOP-72i-55	8/15/2010	1.0 U	20	2.4	16	1.0 U	1.0 U						
BOP-72i-61	8/15/2010	1.0 U	30	5.6	17	2.8	1.0 U						
BOP-72i-67	8/15/2010	1.0 U	33	8.2	14	2.8	1.0 U						
BOP-72i-73	8/15/2010	1.0 U	6.6	1.0	42	3.2	1.0 U						
BOP-72i-78	8/15/2010	1.0 U	1.0 U	1.0 U	23	1.2	1.0 U						
BOP-72i	10/19/2010	1.0 U	28	3.1	10	2.7	1.0 U	1.2	12.9	1.77	106	1.2 U	1.1 U
BOP-72i	12/6/2010	2.0 U	3.6	2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	5.0 U	3020	849	1.2 U	1.1 U
BOP-72i	2/2/2011	20 U	20 U	20 U	20 U	20 U	20 U						
BOP-72i	5/5/2011	1.0 U	1.0 U	1.0 U	6.3	1.0 U	1.0 U						
BOP-72i	8/10/2011	1.0 U	1.0 U	1.0 U	10	1.0 U	1.0 U	1.0 U	1.5	263	7700	1.2 U	1.1 U
BOP-72i	11/3/2011	1.0 U	1.0 U	1.0 U	3.0	1.0 U	6.8						
BOP-72i	2/8/2012	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	7.5						
BOP-72i	5/4/2012	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	9.0						
BOP-72i-67	8/9/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10						
BOP-72i	11/8/2012	0.5 U	0.2 U	0.2 U	0.2	0.2 U	5.1						
BOP-72i	2/5/2013	0.5 U	0.2 U	0.2 U	0.3	0.2 U	3.4						
BOP-72i	5/2/2013	0.5 U	0.2 U	0.2 U	0.2	0.2 U	3.3						
BOP-72i	8/6/2013	0.5 U	0.2 U	0.2 U	0.7	0.2 U	2.7	0.1 U	5.0 U	47.4	13000	5.0 U	5.0
BOP-72i	11/7/2013	0.5 U	0.2 U	0.2 U	0.3	0.2 U	1.9	0.1 U	1.0 U	41.7	11000	5.0 U	5.0 U
BOP-72i	8/13/2014	0.5 U	0.2 U	0.2 U	0.2	0.2 U	1.1	0.1 U	1.0 U	36.6	14000	5.0 U	5.0 U
BOP-72i	11/6/2014	0.5 U	0.2 U	0.2 U	0.3	0.2 U	1.9	0.1 U	2.8	13.6	14000	5.0 U	5.0 U
BOP-72i	2/5/2015	0.5 U	0.2 U	0.2 U	1.2	0.2 U	3.3	0.10 U	16.2	8.6	13000	5.0 U	6.2
BOP-72i	5/6/2015	0.5 U	2.0	0.2 U	5.4	0.2	9.1	0.10 U	16.8	6.7	11000	5.0 U	5.0 U
BOP-72i	8/10/2015	0.5 U	0.2 U	0.2 U	0.4	0.2 U	1.9	0.10 UJ	1.1	161	15000	5.0 U	5.0 U
BOP-72i	11/4/2015	0.5 U	0.2 U	0.2 U	1.1	0.2 U	2.9	0.10 U	6.9 J	3.7	18000	5.0 U	5.0 U
BOP-72i	2/3/2016	0.5 U	0.2 U	0.2 U	2.1	0.2 U	3.2	0.1 U	4.7	3.2	5600	5.0 U	5.0 U
BOP-72i	5/4/2016	0.5 U	1	0.2 U	2.2	0.2 U	2.9	0.10 U	9.7	3.9	16000	5.0 U	5.0 U
BOP-72i	8/9/2016	0.5 U	2.7	0.2 U	6.5	0.2 U	5.2	0.10 U	16.5	1.0 U	9900	5.0 U	5.0 U
BOP-72i	11/10/2016	0.5 U	6.7	0.2 U	14	1.1	3.0	0.10 U	17.7	2.2	20000	5.0 U	5.0 U
BOP-73i-60	2/4/2010	1.0 U	110	4.0	5.3	2.2	1.0 U						
BOP-73i-66	2/4/2010	1.0 U	92	4.4	3.7	2.2	1.0 U						
BOP-73i-71	2/4/2010	1.0 U	320	11	7.7	3.4	1.0 U						
BOP-73i-78	2/4/2010	1.0 U	900	17	33	3.4	1.0 U						
BOP-73i-82	2/4/2010	1.0 U	170	3.4	350	3.1	1.4						
BOP-73i-60	5/1/2010	3.0 U	86	3.0 U	8.0	3.0 U	3.0 U						
BOP-73i-66	5/1/2010	3.0 U	68	3.0 U	8.8	3.0 U	3.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-73i-71	5/1/2010	1.0 U	34	1.5	4.4	2.0	1.0 U						
BOP-73i-78	5/1/2010	1.0 U	360	4.8	91	3.0	1.0 U						
BOP-73i-82	5/1/2010	1.0 U	14	1.0 U	9.0	1.3	1.0 U						
BOP-73i-60	8/15/2010	1.0 U	14	1.0 U	12	1.0 U	1.0 U						
BOP-73i-66	8/15/2010	1.0 U	46	2.1	22	1.1	1.0 U						
BOP-73i-71	8/15/2010	1.0 U	210	7.3	60 E	2.3	1.0 U						
BOP-73i-78	8/15/2010	1.0 U	520	14	180	2.9	1.0 U						
BOP-73i-82	8/15/2010	1.0 U	3.2	1.0 U	520	1.7	2.9						
BOP-73i	10/19/2010	1.0 U	560 J	12	90	2.4	1.0 U	0.7	11	1.6	59.9	1.2 U	1.1 U
BOP-73i	12/6/2010	2.0 U	520	19	59	2.6	2.0 U	1.0	10.3	2.24			
BOP-73i	2/2/2011	1.0 U	1000	37	78 E	3.5	1.0 U						
BOP-73i	5/5/2011	3.0 U	1200	43	42	3.0 U	3.0 U						
BOP-73i	8/9/2011	1.0 U	510	18	48	2.7	1.0 U	1.0	11.8	1.88	1010	1.2 U	1.1 U
BOP-73i	11/3/2011	1.0 U	160	4.7	130	1.9	1.0 U						
BOP-73i	12/1/2011	1.0 U	180	5.0	120	2.3	1.0 U	0.6	9.5	1.93	759	1.2 U	1.1 U
BOP-73i	1/19/2012	5.0 U	240	7.8	100	5.0 U	12	0.3	8.8	9.26			
BOP-73i	2/16/2012	1.0 U	190	4.0	59	1.7	24	0.3	11.5	1.5 U	1350	1.2 U	1.1 U
BOP-73i	3/15/2012	1.0 U	290	6.4	53	2.0	13	0.8	11.2	2.14	535	1.2 U	1.1 U
BOP-73i	4/17/2012	5.0 U	1400	26	50	5.0 U	14	1.0	10.7	1.5 U	438	1.2 U	1.1 U
BOP-73i	6/12/2012	1.0 U	2700 J	72 J	220 J	2.3 J	45 J	0.9	9.7	1.61	787	1.2 U	2.8
BOP-73i-78	8/9/2012	1.0 U	180	2.2	190	1.5	13						
BOP-73i	9/18/2012	5.0 U	1300	41	340	2.4	38	0.28	8.4	5.2	1600	5.0 U	5.0 U
BOP-73i	11/14/2012	5.0 U	2900	83	110	2.9	2.6	0.89	10.2	1.0 U	3200	5.0 U	5.0 U
BOP-73i	2/6/2013	1.0 U	390	13	77	2.3 J	4.7	0.11	8.9	1.9	1400	5.0 U	5.0 U
BOP-73i	5/7/2013	1.0 U	11000	16	6200	11	380	0.1 U	7.8	2.0	2800	5.0 U	29
BOP-73i	8/6/2013	5.0 U	1800	6.5	670	3.0	65	0.1 U	10.2	2.4	4800	5.0 U	27
BOP-73i	11/7/2013	10 U	17000	4.0 U	7800	14	250	0.1 U	8.6	2.0	1900	5.0 U	30
BOP-73i	8/13/2014	5.0 U	2.0 U	2.0 U	2800	4.9	13000	0.1 U	1.4	32.9	4800	5.0 U	730
BOP-73i	11/6/2014	0.5 U	1.7	0.2 U	47	0.2 U	73	0.1 U	4.1	11.9	5600	5.0 U	210
BOP-73i	2/5/2015	5.0 U	2.0 U	2.0 U	340	2.0 U	720	0.10 U	1.1	4.3	8400	7.1	340
BOP-73i	5/6/2015	5.0 U	2.0 U	2.0 U	150	2.0 U	730	0.10 U	1.4	7.2 J	13000	5.0 U	160
BOP-73i	8/10/2015	0.5 U	1.3	0.2 U	24	0.2 U	20	0.10 UJ	4.8	28.4	12000	5.0 U	140
BOP-73i	11/4/2015	0.5 U	5.8	0.2 U	92	0.5	19	0.10 U	10.9	5.1	7500	9.9	8.7
BOP-73i	2/3/2016	0.5 U	0.4	0.2 U	2.5	0.2 U	8.8	0.1 U	2.4	9.6	15000	72	77
BOP-73i	5/4/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	1.6	3.7	20000	98	22
BOP-73i	8/9/2016	0.5 U	0.7	0.2 U	2.7	0.2 U	2.6	0.10 U	8.0	2.3	6800	54	5.0 U
BOP-73i	11/10/2016	0.5 U	1.5	0.2 U	5.1	0.2 U	3.2	0.10 U	7.3	2.5	2900	32	5.0 U
BOP-74i-60	2/4/2010	1.0 U	36	1.5	3.4	1.6	1.0 U						
BOP-74i-66	2/4/2010	1.0 U	38	2.4	3.4	1.9	1.0 U						
BOP-74i-71	2/4/2010	1.0 U	38	2.2	3.7	2.0	1.0 U						
BOP-74i-78	2/4/2010	1.0 U	37	1.9	3.4	1.9	1.0 U						
BOP-74i-82	2/4/2010	1.0 U	15	1.0 U	9.9	1.2	1.0 U						
BOP-74i-60	5/1/2010	1.0 U	29	1.0 U	3.9	1.8	1.0 U						
BOP-74i-66	5/1/2010	1.0 U	35	1.4	4.4	2.1	1.0 U						
BOP-74i-71	5/1/2010	1.0 U	74	1.9	9.1	2.7	1.0 U						
BOP-74i-78	5/1/2010	1.0 U	33	1.1	4.4	2.1	1.0 U						
BOP-74i-82	5/1/2010	1.0 U	27	1.0 U	400	1.1	5.3						
BOP-74i-60	8/15/2010	1.0	50	1.7	6.6	4.6	1.0 U						
BOP-74i-66	8/15/2010	1.1	53	1.6	7.0	5.1	1.0 U						
BOP-74i-71	8/15/2010	1.1	52	1.6	6.6	5.0	1.0 U						
BOP-74i-78	8/15/2010	1.0 U	55	1.6	7.0	5.2	1.0 U						
BOP-74i-82	8/15/2010	1.0 U	24	1.0 U	28	4.0	1.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-74i	10/19/2010	1.0 U	38	1.0	8.0	3.9	1.0 U	0.9	9.1	1.5 U	75.6	1.2 U	1.1 U
BOP-74i	12/6/2010	1.0 U	24	1.0 U	6.5	1.6	1.0 U	0.2	9.9	2.79			
BOP-74i	2/2/2011	1.0 U	44	2.6	3.8	2.7	1.0 U	0.1 U	6.6	2.69	4270	1.2 U	1.1 U
BOP-74i	5/5/2011	1.0 U	26	2.0	8.0	1.6	1.0 U	0.1 U	6.7	3.03	1830	1.2 U	1.1 U
BOP-74i	8/9/2011	1.0 U	8.9	1.0 U	7.2	1.0 U	1.0 U	0.1 U	6.6	2.69	4270	1.2 U	1.1 U
BOP-74i	11/3/2011	1.0 U	3.1	1.0 U	16	1.0 U	1.0 U						
BOP-74i	12/1/2011	1.0 U	8.6	1.0 U	17	1.0 U	1.0 U	0.1 U	6.7	3.03	1830	1.2 U	1.1 U
BOP-74i	1/19/2012	1.0 U	11	1.0 U	18	1.0 U	1.0 U	1.0 U	1.0 U	1450	2550	1.6	1.1 U
BOP-74i	2/16/2012	1.0 U	2.4	1.0 U	44	1.0 U	1.6	0.5 U	0.5 U	668	6680	1.2 U	1.1 U
BOP-74i	3/15/2012	1.0 U	1.4	1.0 U	210	1.0 U	3.2	0.5 U	0.5 U	330	8410	1.2 U	1.1 U
BOP-74i	4/17/2012	5.0 U	5.0 U	5.0 U	79	5.0 U	50	0.1 U	0.8	72	8800	1.2 U	1.1 U
BOP-74i	6/12/2012	1.0 U	1.0 U	1.0 U	1.2	1.0 U	14	0.1 U	0.1 U	67.6	5720	1.2 U	1.1 U
BOP-74i-71	8/9/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.9						
BOP-74i	9/19/2012	0.5 U	4.5	0.2 U	60	1.1	2.9	0.1 U	1.0 U	1280	13000	5.0 U	5.0 U
BOP-74i	11/14/2012	0.5 U	0.6	0.2 U	6.9	0.9	18	0.1 U	1.0 U	145	22000	7.0 U	5.0 U
BOP-74i	2/6/2013	0.5 U	0.5	0.2 U	1.7	0.4 J	2.9	0.1 U	1.0 U	83.7	27000	5.0 U	5.0 U
BOP-74i	5/7/2013	0.5 U	4.0	0.2 U	2.7	0.3	1.8	0.1 U	1.0 U	128	21000	5.0 U	5.0 U
BOP-74i	8/6/2013	0.5 U	0.6	0.2 U	14	0.5	8.1	0.1 U	1.0 U	669	26000	5.0 U	5.0 U
BOP-74i	11/7/2013	0.5 U	0.2 U	0.2 U	3.6	0.2 U	1.6	0.1 U	1.0 U	330	17000	5.0 U	7.3
BOP-74i	11/6/2014	0.5 U	0.3	0.2 U	11	0.3	2.1	0.63	501	2860	21000 J	5.0 UJ	5.0 UJ
BOP-74i	2/6/2015	0.5 U	0.4	0.2 U	15	0.3	1.9	0.54	626	2230	21000	5.0 U	5.0 U
BOP-74i	5/6/2015	0.5 U	0.5	0.2 U	15	0.3	1.6	0.27	247	1240	21000	5.0 U	5.0 U
BOP-74i	11/4/2015	0.5 U	0.2 U	0.2 U	5.3	0.2 U	2.9						
BOP-74i	2/3/2016	0.5 U	0.2 U	0.2 U	11	0.3	3.1	1.0 U	1460	4200	21000	5 U	5 U
BOP-74i	5/4/2016	0.5 U	0.2	0.2 U	11	0.2 U	2.6	1.0 U	601	2480	19000	5.0 U	5.0 U
BOP-74i	8/9/2016	0.5 U	0.2	0.2 U	11	0.2 U	1.6	0.45	453	1840	18000	5.0 U	5.0 U
BOP-74i	11/10/2016	0.5 U	0.2	0.2 U	9.9	0.2 U	1.3	0.16	225	1430	22000	5.0 U	5.0 U
BOP-75i-50	2/2/2011	1.0 U	48	1.0 U	10	3.5	1.0 U						
BOP-75i-56.5	2/2/2011	1.0 U	53	2.0	9.5	3.6	1.0 U						
BOP-75i-62.5	2/2/2011	1.0 U	78	2.4	10	6.1	1.0 U						
BOP-75i-68.7	2/2/2011	1.0 U	87	2.5	11	6.4	1.0 U						
BOP-75i-73.5	2/2/2011	1.0 U	53	1.0 U	9.0	4.7	1.0 U						
BOP-75i-50	5/5/2011	1.0 U	11	1.0 U	4.7	1.0	1.0 U						
BOP-75i-56.5	5/5/2011	1.0 U	40	1.2	8.0	2.4	1.0 U						
BOP-75i-62.5	5/5/2011	1.0 U	48	1.0 U	13	4.3	1.0 U						
BOP-75i-68.7	5/5/2011	1.0 U	52	1.1	11	4.2	1.0 U						
BOP-75i-73.5	5/5/2011	1.0 U	46	1.0 U	12	4.1	1.0 U						
BOP-75i-50	8/10/2011	1.0 U	14	1.0 U	4.9	1.1	1.0 U						
BOP-75i-57	8/10/2011	1.0 U	41	2.1	7.8	2.1	1.0 U						
BOP-75i-63	8/10/2011	1.0 U	39	1.9	7.6	2.0	1.0 U						
BOP-75i-69	8/10/2011	1.0 U	59	1.6	11	4.7	1.0 U	1.1	13.5	4.77	0.7 U	1.2 U	1.1 U
BOP-75i-74	8/10/2011	1.0 U	54	1.2	16	4.6	1.0 U						
BOP-75i-50	11/3/2011	1.0 U	21	1.0 U	6.0	1.3	1.0 U						
BOP-75i-56.5	11/3/2011	1.0 U	39	2.2	7.4	1.6	1.0 U						
BOP-75i-62.5	11/3/2011	1.0 U	38	1.8	6.7	1.5	1.0 U						
BOP-75i-68.5	11/3/2011	1.0 U	58	1.2	10	4.3	1.0 U						
BOP-75i-73.5	11/3/2011	1.0 U	51	1.0 U	14	4.4	1.0 U						
BOP-75i-50	2/8/2012	1.0 U	24	1.0 U	7.1	1.6	1.0 U						
BOP-75i-56.5	2/8/2012	1.0 U	40	1.4	8.2	2.1	1.0 U						
BOP-75i-62.5	2/8/2012	1.0 U	41	1.4	7.9	2.0	1.0 U						
BOP-75i-68.7	2/8/2012	1.0 U	55	1.3	9.7	4.0	1.0 U						
BOP-75i-73.5	2/8/2012	1.0 U	48	1.0 U	12	4.0	1.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-75i-50	5/4/2012	1.0 U	17	1.0 U	6.9	1.4	1.0 U						
BOP-75i-56.5	5/4/2012	1.0 U	43	1.3	9.0	2.4	1.0 U						
BOP-75i-62.5	5/4/2012	1.0 U	43	1.0	9.1	2.5	1.0 U						
BOP-75i-68.7	5/4/2012	1.0 U	52	1.0 U	10	4.6	1.0 U						
BOP-75i-73.5	5/4/2012	1.0 U	43	1.0 U	13	4.2	1.0 U						
BOP-75i-68.7	8/9/2012	1.0 U	39	1.6	7.2	1.7	1.0 U						
BOP-75i	11/8/2012	0.5 U	35	1.0	6.9	2.9	0.2 U						
BOP-75i-68.7	2/5/2013	0.5 U	54	1.0	9.5	5.4	0.2 U						
BOP-75i	5/2/2013	0.5 U	42	0.8	7.5	3.6	0.2 U						
BOP-75i	6/17/2013	0.5 U	35	0.7	9.8	3.2	0.2 U	1.7	13.6	2.3	5.0 U	5.0 U	5.0 U
BOP-75i	8/6/2013	0.5 U	1.3	0.2	37	2.9	0.2	0.1 U	1.0 U	51.3	390	5.0 U	5.0 U
BOP-75i	11/7/2013	0.5 U	2.2	0.2 U	2.4	0.4	25	0.1 U	4.5	5.5	12000	5.0 U	5.0 U
BOP-75i	8/13/2014	0.5 U	6.2	0.2 U	9.5	0.9	10	0.1 U	27.7	258	9900	5.0 U	5.0 U
BOP-75i	11/5/2014	0.5 U	0.2 U	0.2 U	4.3	0.4	11						
BOP-75i	2/6/2015	0.5 U	9.1	0.2 U	8.6	1.1	4.2	0.10 U	3.4	3.9	14000	5.0 U	5.0 U
BOP-75i	5/4/2015	0.5 U	13	0.2 U	6.4	0.4	4.3						
BOP-75i	8/10/2015	0.5 U	1.5	0.2 U	4.2	0.3	3.3	0.10 UJ	255	1170	15000	5.0 U	5.0 U
BOP-75i	11/6/2015	0.5 U	0.4	0.2 U	4.7	0.3	4.2						
BOP-75i	2/3/2016	0.5 U	1.1	0.2 U	3.5	0.3	4.3	0.1 U	5.5	2.5	18000	5.0 U	5.0 U
BOP-75i	5/5/2016	0.5 U	2.0	0.2 U	3.9	0.4	5.4						
BOP-75i	8/9/2016	0.5 U	1.0	0.2 U	3.0	0.3	4.7	0.10 U	6.0	1.9	18000	5.0 U	5.0 U
BOP-75i	11/4/2016	0.5 U	6.2	0.2 U	3.0	0.5	3.4 J						
BOP-76i-50	2/2/2011	1.0 U	6.9	1.5	1.0 U	1.6	1.0 U						
BOP-76i-56.5	2/2/2011	1.0 U	7.7	2.5	1.0 U	1.7	1.0 U						
BOP-76i-62.5	2/2/2011	1.0 U	8.3	1.6	1.0 U	1.5	1.0 U						
BOP-76i-68.7	2/2/2011	1.0 U	8.5	1.7	1.0 U	1.6	1.0 U						
BOP-76i-73.5	2/2/2011	1.0 U	8.1	1.4	1.0 U	1.6	1.0 U						
BOP-76i-50	5/5/2011	1.0 U	5.2	1.0 U	1.0	1.0 U	1.0 U						
BOP-76i-56.5	5/5/2011	1.0 U	7.0	1.2	1.1	1.1	1.0 U						
BOP-76i-62.5	5/5/2011	1.0 U	7.0	1.0 U	1.1	1.1	1.0 U						
BOP-76i-68.7	5/5/2011	1.0 U	6.8	1.0 U	1.2	1.0	1.0 U						
BOP-76i-73.5	5/5/2011	1.0 U	6.6	1.0 U	1.2	1.0	1.0 U						
BOP-76i-50	8/9/2011	1.0 U	12	1.5	4.5	1.0 U	1.0 U						
BOP-76i-56.5	8/9/2011	1.0 U	12	1.6	4.9	1.0 U	1.0 U						
BOP-76i-62.5	8/9/2011	1.0 U	12	1.6	4.6	1.0 U	1.0 U						
BOP-76i-68.7	8/9/2011	1.0 U	13	1.2	4.6	1.0 U	1.0 U	3.8	10.2	2.37	0.7 U	1.2 U	1.1 U
BOP-76i-73.5	8/9/2011	1.0 U	9.3	1.0 U	42	1.0 U	1.0 U						
BOP-76i-50	11/3/2011	1.0 U	40	1.4	2.4	1.0 U	1.0 U						
BOP-76i-56.5	11/3/2011	1.0 U	28	2.2	1.6	1.0	1.0 U						
BOP-76i-62.5	11/3/2011	1.0 U	26	1.2	1.6	1.0	1.0 U						
BOP-76i-68.7	11/3/2011	1.0 U	27	1.4	1.6	1.0 U	1.0 U						
BOP-76i-73.5	11/3/2011	1.0 U	25	1.1	1.6	1.0 U	1.0 U						
BOP-76i-50	2/8/2012	1.0 U	2.1	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-76i-56.5	2/8/2012	1.0 U	1.8	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-76i-62.5	2/8/2012	1.0 U	1.9	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-76i-68.7	2/8/2012	1.0 U	2.1	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-76i-73.5	2/8/2012	1.0 U	2.6	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-76i-50	5/4/2012	1.0 U	1.9	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-76i-56.5	5/4/2012	1.0 U	6.6	1.0 U	1.8	1.0 U	1.0 U						
BOP-76i-62.5	5/4/2012	1.0 U	8.7	1.0 U	1.6	1.3	1.0 U						
BOP-76i-68.7	5/4/2012	1.0 U	9.2	1.0 U	1.5	1.4	1.0 U						
BOP-76i-73.5	5/4/2012	1.0 U	9.0	1.0 U	1.5	1.5	1.0 U						

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-76i-68.7	8/9/2012	1.0 U	33	1.1	2.2	1.0	1.0 U						
BOP-76i	11/8/2012	0.5 U	9.8	0.8	1.7	1.4	0.2 U						
BOP-76i-68.7	2/5/2013	0.5 U	11	0.8	1.5	1.8	0.2 U						
BOP-76i	5/2/2013	0.5 U	22	1.4	1.7	1.3	0.2 U						
BOP-76i	6/17/2013	0.5 U	26	1.1	1.9	1.5	0.2 U	3.7	11	1.6	5.0 U	5.0 U	5.0 U
BOP-76i	8/6/2013	0.5 U	1.0	0.2 U	100	1.2	8.3	0.1 U	1.0 U	111	3400	5.0 U	5.0 U
BOP-76i	11/7/2013	0.5 U	140	2.4	37	0.6	42	0.1 U	3.5	6.9	11000	5.0 U	5.0 U
BOP-76i	8/13/2014	0.5 U	13	0.3	24	0.7	4.1	0.1 U	3.2	170	7600	5.0 U	5.0 U
BOP-76i	11/6/2014	0.5 U	1.4	0.2 U	9.5	0.6	2.1	0.2	3.2	51.2	21000	5.0 U	15
BOP-76i	2/5/2015	0.5 U	1.0	0.2 U	7.0	0.5	2.2	0.21	5.1	12.7	19000	5.0 U	30
BOP-76i	5/7/2015	0.5 U	0.6	0.2 U	6.6	0.3	3.9	0.10 U	5.5	7.5	20000	5.0 U	5.0 U
BOP-76i	8/10/2015	0.5 U	2.2	0.2 U	14	0.6	2.0	0.10 UJ	108	659	12000	5.0 U	5.0 U
BOP-76i	11/4/2015	0.5 U	0.9	0.2 U	14	0.5	2.0	0.10 U	4.0	115	15000	5.0 U	5.0 U
BOP-76i	2/3/2016	0.5 U	1	0.2 U	9.8	0.7	1.6	0.1 U	6.3	5.0	16000	5.0 U	5.0 U
BOP-76i	5/4/2016	0.5 U	0.5	0.2 U	10	0.6	3.8	0.10 U	4.5	26.4	18000	5.0 U	5.0 U
BOP-76i	8/9/2016	0.5 U	1.1	0.2 U	11	0.5	4.2	0.10 U	6.7	7.8	14000	5.0 U	5.0 U
BOP-76i	11/10/2016	0.5 U	3.5	0.2 U	7.4	0.4	2.5	0.10 UJ	21.9	3.4	14000	5.0 U	5.0 U
BOP-77i-60	2/2/2011	1.0 U	53	2.6	2.5	1.6	1.0 U						
BOP-77i-66.5	2/2/2011	1.0 U	51	3.2	2.4	1.7	1.0 U						
BOP-77i-72.5	2/2/2011	1.0 U	50	2.9	2.4	1.6	1.0 U						
BOP-77i-78.7	2/2/2011	1.0 U	88	1.7	2.7	1.5	1.0 U						
BOP-77i-83.5	2/2/2011	1.0 U	690	2.3	51	2.0	1.0 U						
BOP-77i-60	5/5/2011	1.0 U	34	1.5	3.7	1.5	1.0 U						
BOP-77i-66.5	5/5/2011	1.0 U	38	2.2	3.6	1.5	1.0 U						
BOP-77i-72.5	5/5/2011	1.0 U	38	1.6	3.6	1.5	1.0 U						
BOP-77i-78.7	5/5/2011	1.0 U	41	1.0 U	3.8	1.4	1.0 U						
BOP-77i-83.5	5/5/2011	1.0 U	19	1.0 U	58	1.0	1.0 U						
BOP-77i-60	8/9/2011	1.0 U	51	2.8	1.8	1.1	1.0 U						
BOP-77i-66.5	8/9/2011	1.0 U	20	2.1	1.5	1.2	1.0 U						
BOP-77i-72.5	8/9/2011	1.0 U	17	1.9	1.6	1.2	1.0 U						
BOP-77i-78.7	8/9/2011	1.0 U	17	1.8	1.6	1.2	1.0 U						
BOP-77i-83.5	8/9/2011	1.0 U	17	1.6	1.6	1.2	1.0 U	0.1 U	6.5	2.35	5480	1.2 U	1.1 U
BOP-77i-60	11/3/2011	1.0 U	10	1.0 U	5.5	1.0 U	1.0 U						
BOP-77i-66.5	11/3/2011	1.0 U	9.3	1.1	6.2	1.0 U	1.0 U						
BOP-77i-72.5	11/3/2011	1.0 U	9.3	1.0 U	5.9	1.0 U	1.0 U						
BOP-77i-78.7	11/3/2011	1.0 U	11	1.0 U	6.7	1.0 U	1.0 U						
BOP-77i-83.5	11/3/2011	1.0 U	6.4	1.0 U	42	1.0 U	1.0 U						
BOP-77i	12/1/2011	1.0 U	32	1.1	7.1	1.0 U	1.0 U	0.2	8.4	2.41	0.7 U	1.2 U	1.1 U
BOP-77i	1/19/2012	20 U	21	20 U	20 U	20 U	20 U	1.0 U	4.0	3800			
BOP-77i	2/16/2012	1.0 U	8.4	1.0 U	48	1.0 U	1.8	0.5 U	0.5 U	884	6600	1.2 U	1.1 U
BOP-77i	3/15/2012	1.0 U	2.2	1.0 U	120	1.0 U	4.6	0.5 U	0.5 U	148	10000	1.2 U	1.1 U
BOP-77i	4/17/2012	3.0 U	3.0 U	3.0 U	21	3.0 U	62	0.1 U	0.6	208	12200	1.2 U	1.1 U
BOP-77i	6/12/2012	1.0 U	1.4	1.0 U	1.2	1.0 U	60	0.1 U	0.1 U	314	8380	1.2 U	1.1 U
BOP-77i-78.7	8/9/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	59						
BOP-77i	9/18/2012	10 U	4.0 U	4.0 U	28	4.0 U	4.1	0.5 U	6.3	4670	9200	5.0 U	5.0 U
BOP-77i	11/14/2012	0.5 U	17	0.2 U	150	0.6	15	1.0 U	10 U	2270	22000	6.0 U	5.0 U
BOP-77i	2/6/2013	1.0 U	11	0.4 U	31	0.4 U	3.2	0.1 U	4.1	1130	15000	5.0 U	5.5
BOP-77i	5/7/2013	0.5 U	18	0.2 U	17	0.2 U	11	0.1 U	1.0 U	112	23000	5.0 U	13
BOP-77i	8/6/2013	0.5 U	0.7	0.2 U	14	0.2 U	13	0.1 U	1.0 U	888	17000	5.0 U	8.6
BOP-77i	11/7/2013	0.5 U	0.2 U	0.2 U	9.5	0.2 U	19	0.1 U	1.0 U	111	20000	5.0 U	22
BOP-77i	8/13/2014	0.5 U	0.6	0.2 U	81	0.2 U	17	0.5 U	2750	10100	15000 J	5.0 UJ	24 J
BOP-77i	11/6/2014	0.5 U	2.7	0.2 U	200	0.3	24	0.5 U	1850	4920	22000 J	5.0 UJ	63 J

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-77i	2/6/2015	0.5 U	4.2	0.2 U	120 J	0.3	24	0.5 U	855	4330	26000	5.0 U	58
BOP-77i	5/6/2015	0.5 U	6.2	0.2 U	220	0.3	20	1.0	519	3030	19000	5.6	47
BOP-77i	8/10/2015	0.5 U	6.2	0.2 U	86	0.2 U	11	1.0 U	3830	9110	15000	6.8	75
BOP-77i	11/4/2015	0.5 U	8.2	0.2 U	72	0.2 U	13	50 U	2860	6350	15000	5.1	22
BOP-77i	2/3/2016	0.5 U	6.2	0.2 U	61	0.2 U	8.7	1 U	1530	4650	20000	5.0	16
BOP-77i	5/4/2016	0.5 U	4.9	0.2 U	44	0.2 U	6.7	1.0 U	892	2990 J	17000	18	21
BOP-77i	8/9/2016	0.5 U	2.7	0.4	33	0.2 U	2.1	0.51	165	1450	16000	6.0	5.0 U
BOP-77i	11/10/2016	0.5 U	2.6	0.2 U	15	0.2 U	1.5	0.12 J	5.3	265	29000	5.0 U	8.5
BOP-78i-51.5	11/21/2011	1.0 U	39	1.6	5.6	1.9	1.0 U						
BOP-78i-57.5	11/21/2011	1.0 U	35	1.9	5.6	1.9	1.0 U						
BOP-78i-63.5	11/21/2011	1.0 U	36	1.6	5.8	2.0	1.0 U						
BOP-78i-69.5	11/21/2011	1.0 U	37	1.7	6.1	2.0	1.0 U						
BOP-78i-75.5	11/21/2011	1.0 U	39	1.7	6.7	1.9	1.0 U						
BOP-78i-51.5	8/9/2012	1.0 U	160	3.4	3.2	1.0 U	1.0 U						
BOP-78i-57.5	8/9/2012	1.0 U	31	1.2	8.1	1.6	1.0 U						
BOP-78i-63.5	8/9/2012	1.0 U	31	1.3	9.4	1.7	1.0 U						
BOP-78i-69.5	8/9/2012	1.0 U	30	1.1	9.3	1.7	1.0 U						
BOP-78i-75.5	8/9/2012	1.0 U	30	1.2	9.5	1.7	1.2						
BOP-78i-51.5	11/8/2012	0.5 U	0.7	0.2 U	6.1	0.2 U	49						
BOP-78i-57.5	11/8/2012	0.5 U	0.4	0.2 U	7.1	0.2 U	50						
BOP-78i-63.5	11/8/2012	0.5 U	0.3	0.2 U	7.0	0.2 U	52						
BOP-78i-69.5	11/8/2012	0.5 U	0.3	0.2 U	7.2	0.2 U	51						
BOP-78i-75.5	11/8/2012	0.5 U	0.3	0.2 U	7.0	0.2 U	52						
BOP-78i-69.5	2/6/2013	0.5 U	0.3	0.2 U	11	0.2 U	78						
BOP-78i	5/2/2013	0.5 U	0.3	0.2 U	0.6	0.2 U	19						
BOP-78i	8/7/2013	0.5 U	5.5	0.2	120	0.6	98						
BOP-78i	11/8/2013	0.5 U	0.2 U	0.2 U	1.1	0.2 U	17						
BOP-78i	11/5/2014	0.5 U	1.7	0.2 U	23	0.2 U	2.6						
BOP-78i	2/5/2015	0.5 U	3.2	0.2 U	12	0.2 U	1.8						
BOP-78i	5/4/2015	0.5 U	1.0	0.2 U	7.8	0.2 U	2.4						
BOP-78i	11/6/2015	0.5 U	0.2	0.2 U	3.1	0.2 U	1.4						
BOP-78i	2/4/2016	0.5 U	0.3	0.2 U	4.2	0.2 U	2.2						
BOP-78i	5/5/2016	0.5 U	0.4	0.2 U	10	0.2 U	6.1						
BOP-78i	8/8/2016	0.5 U	0.9	0.2 U	24	0.2 U	13						
BOP-78i	11/4/2016	0.5 U	0.7	0.2 U	12	0.2 U	7.5 J						
BOP-79i-51.5	11/21/2011	1.0 U	42	1.2	5.5	1.8	1.0 U						
BOP-79i-57.5	11/21/2011	1.0 U	42	1.6	4.7	1.8	1.0 U						
BOP-79i-63.5	11/21/2011	1.0 U	43	1.8	5.6	1.9	1.0 U						
BOP-79i-69.5	11/21/2011	1.0 U	42	1.8	5.0	1.9	1.0 U						
BOP-79i-75.5	11/21/2011	1.0 U	41	1.6	5.2	1.9	1.0 U						
BOP-79i-51.5	8/9/2012	1.0 U	74	2.0	10	1.1	3.2						
BOP-79i-57.5	8/9/2012	1.0 U	90	2.1	12	1.3	2.5						
BOP-79i-63.5	8/9/2012	1.0 U	99	3.0	12	1.4	1.0 U						
BOP-79i-69.5	8/9/2012	1.0 U	95	2.2	12	1.4	1.0 U						
BOP-79i-75.5	8/9/2012	1.0 U	89	1.9	12	1.3	1.3						
BOP-79i-51.5	11/8/2012	0.5 U	0.5	0.2 U	3.8	0.2 U	64						
BOP-79i-57.5	11/8/2012	0.5 U	0.5	0.2 U	3.7	0.2 U	58						
BOP-79i-63.5	11/8/2012	0.5 U	0.3	0.2 U	4.1	0.2 U	70						
BOP-79i-69.5	11/8/2012	0.5 U	0.2	0.2 U	3.7	0.2 U	68						
BOP-79i-75.5	11/8/2012	0.5 U	0.2 U	0.2 U	2.6	0.2 U	68						
BOP-79i-69.5	2/6/2013	0.5 U	0.2	0.2 U	0.6	0.2 U	5.7						

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-79i	5/2/2013	0.5 U	0.4	0.2 U	24	0.2 U	41						
BOP-79i	8/7/2013	0.5 U	1.0	0.2 U	37	0.3	20						
BOP-79i	11/8/2013	0.5 U	1.9	0.2 U	13	0.2 U	16						
BOP-79i	11/7/2014	0.5 U	1.5	0.2 U	21	0.2 U	5.6						
BOP-79i	2/5/2015	0.5 U	2.1	0.2 U	10	0.2 U	3.8						
BOP-79i	5/4/2015	0.5 U	0.4	0.2 U	2.2	0.2 U	2.0						
BOP-79i	11/6/2015	0.5 U	0.5	0.2 U	8.6	0.2 U	4.3						
BOP-79i	2/4/2016	0.5 U	0.4	0.2 U	4.5	0.2 U	3.5						
BOP-79i	5/5/2016	0.5 U	0.5	0.2 U	3.6	0.2 U	3.6						
BOP-79i	8/8/2016	0.5 U	0.7	0.2 U	4.2	0.2 U	3.4						
BOP-79i	11/4/2016	0.5 U	0.6	0.2 U	4.7	0.2 U	3.7 J						
BOP-80i-63.5	11/21/2011	1.0 U	6.0	1.0 U	9.8	2.0	5.1						
BOP-80i-73.25	11/21/2011	1.0 U	3.7	1.0 U	8.1	1.0 U	7.6						
BOP-80i-83	11/21/2011	1.0 U	3.1	1.0 U	7.4	1.0 U	7.2						
BOP-80i-92.75	11/21/2011	1.0 U	2.4	1.0 U	7.0	1.0 U	7.1						
BOP-80i-102.5	11/21/2011	1.0 U	2.4	1.0 U	7.0	1.0 U	7.0						
BOP-80i	12/1/2011	1.0 U	15	1.0 U	6.1	1.0 U	5.3	0.1 U	3.8	2.43	3970	1.2 U	2.9
BOP-80i	1/19/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.4	0.2	0.4	4.93			
BOP-80i	2/16/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1	2.4	3.28	7440	2.2	1.1 U
BOP-80i	3/15/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7	0.1 U	0.5	4.72	7980	2.4	1.6
BOP-80i	4/17/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	1.0	2.89	12800	1.2 U	1.1 U
BOP-80i	6/12/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7	0.1 U	0.1	2.5	10400	4.4	2.9
BOP-80i	9/18/2012	1.0 U	160	2.0	35	3.5	14	0.1 U	1.9	13.9	14000	7.1	5.0 U
BOP-80i	11/14/2012	2.5 U	610	3.0	240	12	33	0.1 U	3.1	1.5	7500	6.1	5.0 U
BOP-80i	2/6/2013	0.5 U	1.4	0.2 U	0.2 U	0.6 J	0.4	0.15	1.0 U	1.2	23000	5.2	5.0 U
BOP-80i	5/9/2013	0.5 U	0.8	0.2 U	0.2 U	0.4	0.7	0.11	1.0 U	1.3	20000	12	5.0 U
BOP-80i	8/19/2013	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.36	2.3	1.5	17000	9.7	5.0 U
BOP-80i	11/11/2013	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2	0.1 U	1.0 U	1.4	22000	14	5.0 U
BOP-80i	8/14/2014	0.5 U	0.5	0.2 U	1.1	0.2 U	3.1	0.29 J	293 J	909	13000	9.0	5.0 U
BOP-80i	11/6/2014	0.5 U	65	0.8	360	10	63	0.1 U	10.9	1.4	2900	5.0 U	5.0 U
BOP-80i	2/6/2015	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3	0.10 U	1.4	2.7	15000	5.6	5.0 U
BOP-80i	5/6/2015	0.5 U	0.2 U	0.2 U	0.2	0.2 U	0.6	0.10 U	1.0 U	2.4	21000	15	5.0 U
BOP-80i	8/10/2015	0.5 U	91	3.0	430	15	11	0.10 UJ	8.2	1.6	3600	5.0 U	5.0 U
BOP-80i	11/4/2015	0.5 U	0.2 U	0.2 U	0.5	0.2 U	2.1	0.10 U	1.6	2.3	20000	8.9	5.0 U
BOP-80i	2/3/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2	0.1 U	1.4	1.1	27000	5.0 U	5.0 U
BOP-80i	5/4/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.10 U	1.0 U	1.0 U	15000	6.7	5.0 U
BOP-80i	8/11/2016	0.5 U	0.2 U	0.2 U	0.2	0.2 U	0.7	0.10 U	1.0 U	2.5	21000	9.0	5.0 U
BOP-80i	11/11/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3	0.10 U	1.0 U	2.7	20000	10	5.0 U
BOP-81i-59.5	11/21/2011	1.0 U	2.5	1.0 U	1.0 U	2.3	1.0 U						
BOP-81i-69.25	11/21/2011	1.0 U	1.0 U	1.0 U	1.2	1.0 U	4.9						
BOP-81i-79	11/21/2011	1.0 U	1.0 U	1.0 U	1.4	1.0 U	5.2						
BOP-81i-88.75	11/21/2011	1.0 U	1.0 U	1.0 U	1.1	1.0 U	3.2						
BOP-81i-98.5	11/21/2011	1.0 U	1.0 U	1.0 U	1.6	1.0 U	6.2						
BOP-81i	12/1/2011	1.0 U	1.0 U	1.0 U	1.0	1.0 U	4.1	0.1 U	0.5	2.38	8300	2.2	2.0
BOP-81i	1/19/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.9	0.2	0.5	2.65			
BOP-81i	2/16/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	0.5	3.26	16400	1.2 U	1.1 U
BOP-81i	3/15/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1	0.3	3.0	24700	1.2 U	1.1 U
BOP-81i	4/17/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	0.2	2.51	23400	1.2 U	1.1 U
BOP-81i	6/12/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	0.1 U	2.34	20900	1.8	1.1 U
BOP-81i	9/18/2012	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.6	0.1 U	1.0 U	3.0	18000	8.4	5.0 U
BOP-81i	11/14/2012	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	0.11	1.4	1.0 U	15000	8.6	5.0 U

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-81i	2/6/2013	0.5 U	0.2 U	0.2 U	0.2 U	0.3 J	0.2 U	0.12	2.0	1.0 U	30000	5.0 U	5.0 U
BOP-81i	5/9/2013	0.5 U	0.3	0.2 U	0.2 U	0.5	0.5	0.39	7.4	1.0 U	7100	5.0 U	5.0 U
BOP-81i	8/19/2013	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.9	1.2	16.4	1.0 U	3400	5.0 U	5.0 U
BOP-81i	11/11/2013	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.26	3.8	1.2	20000	8.9	5.0 U
BOP-81i	8/14/2014	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.1 U	49.7	225	12000	6.0	5.0 U
BOP-81i	11/6/2014	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3	0.1 U	1.0 U	1.5	25000 J	11 J	5.0 UJ
BOP-81i	2/6/2015	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	6.7	1.0	20000	5.0 U	5.0 U
BOP-81i	5/6/2015	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	2.5	1.0 U	22000	5.0 U	5.0 U
BOP-81i	8/11/2015	0.5 U	0.2 U	0.2 U	0.6	0.2 U	1.2	0.14	4.2	1.6	13000	5.0 U	5.0 U
BOP-81i	11/4/2015	0.5 U	0.2 U	0.2 U	0.3	0.2 U	0.7	0.10 U	1.7	1.6	20000	5.4	5.0 U
BOP-81i	2/4/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.1 U	7.1	1 U	10000	5.0 U	5.0 U
BOP-81i	5/4/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	3.8	1.0 U	21000	5.0 U	5.0 U
BOP-81i	8/11/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.10 U	1.0 U	2.1	22000	5.0 U	5.0 U
BOP-81i	11/11/2016	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3	0.10 U	1.2	1.3	23000	5.0 U	5.0 U
BOP-82i-55.5	11/21/2011	1.0 U	16	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-82i-64	11/21/2011	1.0 U	70	3.9	1.3	1.0 U	1.0 U						
BOP-82i-72.5	11/21/2011	1.0 U	91	4.6	1.6	1.0 U	1.0 U						
BOP-82i-81	11/21/2011	1.0 U	76	4.5	1.5	1.0 U	1.0 U						
BOP-82i-89.5	11/21/2011	1.0 U	80	3.9	1.5	1.0 U	1.0 U						
BOP-82i	12/1/2011	1.0 U	66	4.0	1.4	1.0 U	1.0 U	3.3	9.4	1.5 U	0.7 U	1.2 U	1.1 U
BOP-82i	1/19/2012	1.0 U	47	2.6	1.0	1.0 U	1.0 U	0.2 U	7.3	9.81			
BOP-82i	2/16/2012	1.0 U	38	1.9	6.8	1.0 U	1.0 U	1.7	10.3	4.85	14.4	1.2 U	1.1 U
BOP-82i	3/15/2012	1.0 U	36	2.0	11	1.0 U	1.0 U	1.3	10	3.25	0.7 U	1.2 U	1.1 U
BOP-82i	4/17/2012	1.0 U	29	1.6	4.5	1.0 U	1.0 U	1.8	10.6	2.46	0.7 U	1.2 U	1.1 U
BOP-82i	6/12/2012	1.0 U	24	1.3	2.5	1.0 U	1.0 U	1.8	9.9	2.56	0.7 U	1.2 U	1.1 U
BOP-82i	9/18/2012	0.5 U	19	1.0	1.6	0.4	0.5	1.8	9.9	1.4	15 U	5.0 U	5.0 U
BOP-82i	11/14/2012	0.5 U	24	1.6	1.6	0.6	0.3	1.8	10.3	1.0 U	36	5.0 U	5.0 U
BOP-82i	2/6/2013	0.5 U	15 J	1.5	1.8	0.9 J	0.4	1.3	10.7	1.0 U	36	5.0 U	5.0 U
BOP-82i	5/6/2013	0.5 U	17	1.1	0.9	0.6	0.3	1.0	11.6	1.0 U	480	5.0 U	5.0 U
BOP-82i	8/19/2013	0.5 U	19	1.4	0.5	0.6	0.2 U	1.1	11.5	1.0 U	110	5.0 U	5.0 U
BOP-82i	11/7/2013	0.5 U	17	1.1	0.5	0.7	0.2 U						
BOP-82i	8/14/2014	0.5 U	12	1.0	0.6	0.7	0.2 U	0.1 U	8.8	36.4	1500 J	5.0 UJ	5.0 UJ
BOP-82i	11/7/2014	0.5 U	8.1	0.6	2.7	0.7	0.7						
BOP-82i	2/6/2015	0.5 U	11	0.7	1.7	0.7	0.5	0.36	13.2	1.8	3000	5.0 U	5.0 U
BOP-82i	5/4/2015	0.5 U	9.7	0.7	1.3	0.6	0.2 U						
BOP-82i	8/11/2015	0.5 U	8.6	0.6	1.4	0.7	0.6	0.10 U	5.5	9.5	7500	5.0 U	5.0 U
BOP-82i	11/6/2015	0.5 U	6.0	0.3	2.5	0.7	1.2						
BOP-82i	2/4/2016	0.5 U	8.5	0.5	1.4	0.6	0.4	0.22	11.5	1 U	2300	5.0 U	5.0 U
BOP-82i	5/3/2016	0.5 U	8.3	0.6	0.9	0.6	0.2 U						
BOP-82i	8/11/2016	0.5 U	8.7	0.6	0.6	0.7	0.2 U	0.40	13.4	1.3	1000	5.0 U	5.0 U
BOP-82i	11/16/2016	0.5 U	8.7	0.5	0.6	0.7	0.2 U						
BOP-83i-55.5	11/21/2011	1.0 U	2.1	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-83i-61.5	11/21/2011	1.0 U	2.0	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-83i-67.5	11/21/2011	1.0 U	2.1	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-83i-73.5	11/21/2011	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-83i-79.5	11/21/2011	1.0 U	31	1.0 U	1.0 U	1.0 U	1.0 U						
BOP-83i	12/1/2011	1.0 U	16	1.0 U	1.0 U	1.0 U	1.0 U	8.0	20	1.5 U	0.7 U	1.2 U	1.1 U
BOP-83i	1/19/2012	1.0 U	36	1.8	1.0 U	1.0 U	1.0 U	7.2	19.7	1.5 U			
BOP-83i	2/16/2012	1.0 U	58	2.6	2.5	1.0 U	1.0 U	6.6	24.5	2.73	0.7 U	1.2 U	1.1 U
BOP-83i	3/15/2012	1.0 U	19	1.1	1.0 U	1.0 U	1.0 U	7.5	16.7	1.9	0.7 U	1.2 U	1.1 U
BOP-83i	4/17/2012	1.0 U	7.3	1.0 U	1.0 U	1.0 U	1.0 U	5.2	13.8	1.5 U	0.7 U	1.2 U	1.1 U

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-83i	6/12/2012	1.0 U	3.1	1.0 U	1.0 U	1.0 U	1.0 U	6.8	14.2	1.5 U	0.7 U	1.2 U	1.1 U
BOP-83i	9/18/2012	0.5 U	9.7	0.5	0.3	0.2	0.2 U	6.6	13.6	1.2	15 U	5.0 U	5.0 U
BOP-83i	11/14/2012	0.5 U	5.3	0.2 U	0.2 U	0.2 U	0.2 U	6.3	12.2	1.0 U	6.4	5.0 U	5.0 U
BOP-83i	2/6/2013	0.5 U	21	1.2	0.9	0.4 J	0.2 U	5.9	11.5	1.0 U	5.0 U	5.0 U	5.0 U
BOP-83i	5/6/2013	0.5 U	14	0.8	0.6	0.2	0.2 U	6.0	11.8	1.0 U	5.0 U	5.0 U	5.0 U
BOP-83i	8/22/2013	0.5 U	3.4	0.2 U	0.2 U	0.2 U	0.2 U	5.7	11.5	1.0 U	5.0 U	5.0 U	5.0 U
BOP-83i	11/7/2013	0.5 U	2.4	0.2 U	0.2 U	0.2 U	0.2 U						
BOP-83i	8/14/2014	0.5 U	2.2	0.2 U	0.2 U	0.2 U	0.2 U	4.6	11.6	1.5	41	5.0 U	5.0 U
BOP-83i	11/11/2014	0.5 U	2.1	0.2 U	0.2 U	0.2 U	0.2 U						
BOP-83i	2/6/2015	0.5 U	12	0.4	1.0	0.2	0.2 U	3.6 J	8.9	1.0 U	380	5.0 U	5.0 U
BOP-83i	5/4/2015	0.5 U	2.0	0.2 U	0.2 U	0.2 U	0.2 U						
BOP-83i	8/11/2015	0.5 U	2	0.2 U	0.2 U	0.2 U	0.2 U	4.2	10	1.0 U	100	5.0 U	5.0 U
BOP-83i	11/6/2015	0.5 U	1.9	0.2 U	0.2 U	0.2 U	0.2 U						
BOP-83i	2/4/2016	0.5 U	1.7	0.2 U	0.2 U	0.2 U	0.2 U	3.3	7.5	1.0 U	360	5.0 U	5.0 U
BOP-83i	5/6/2016	0.5 U	2.4	0.2 U	0.2 U	0.2 U	0.2 U						
BOP-83i	8/11/2016	0.5 U	2.6	0.2 U	0.2 U	0.2 U	0.2 U	3.3	9.1	1.0 U	6.9	5.0 U	5.0 U
BOP-83i	11/16/2016	0.5 U	10	0.5	4.5	0.6	0.2 U						
BOP-84i-57	2/8/2012	1.0 U	15	1.0 U	54	1.0 U	1.4						
BOP-84i-63.5	2/8/2012	1.0 U	11	1.0 U	58	1.0 U	1.5						
BOP-84i-69.5	2/8/2012	1.0 U	9.1	1.0 U	56	1.0 U	1.5						
BOP-84i-75	2/8/2012	1.0 U	7.1	1.0 U	55	1.0 U	1.4						
BOP-84i-80.5	2/8/2012	1.0 U	5.6	1.0 U	53	1.0 U	1.4						
BOP-84i-57	5/4/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	120						
BOP-84i-63.5	5/4/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	140						
BOP-84i-69.5	5/4/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	160						
BOP-84i-75	5/4/2012	1.0 U	1.0 U	1.0 U	1.8	1.0 U	150						
BOP-84i-80.5	5/4/2012	1.0 U	1.0 U	1.0 U	3.0	1.0 U	160						
BOP-84i-75	6/12/2012	1.0 U	1.0 U	1.0 U	1.2	1.0 U	14	0.1 U	0.1 U	16.7	9820	1.2 U	13.6
BOP-84i-57	8/9/2012	1.0 U	3.8	1.0 U	3.6	1.0 U	5.6						
BOP-84i-80.5	8/9/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	9.0						
BOP-84i	9/19/2012	1.0 U	4.1	0.4 U	69	0.8	2.9	0.1 U	1.0 U	2620	14000	5.0 U	5.0 U
BOP-84i-57	11/8/2012	0.5 U	0.4	0.2 U	9.5	0.2 U	34						
BOP-84i-63.5	11/8/2012	0.5 U	0.4	0.2 U	9.6	0.2 U	35						
BOP-84i-69.5	11/8/2012	0.5 U	0.4	0.2 U	10	0.2 U	34						
BOP-84i-75	11/8/2012	0.5 U	0.5	0.2 U	11	0.2 U	35	0.1 U	1.0 U	276	22000	5.7	5.0 U
BOP-84i-80.5	11/8/2012	0.5 U	1.3	0.2 U	41	0.3	23						
BOP-84i-75	2/5/2013	0.5 U	0.5	0.2 U	0.7	0.2 U	2.3	0.1 U	1.0 U	80.5	26000	5.0 U	5.0 U
BOP-84i	5/6/2013	0.5 U	0.4	0.2 U	0.5	0.2 U	1.6	0.1 U	1.0 U	102	21000	5.0 U	5.0 U
BOP-84i	8/7/2013	0.5 U	2.2	0.2 U	18	0.2 U	15						
BOP-84i	11/8/2013	0.5 U	0.7	0.2 U	3.3	0.3	1.3						
BOP-84i	11/7/2014	0.5 U	0.2 U	0.2 U	8.0	0.2 U	2.9						
BOP-84i	2/3/2015	0.5 U	0.5	0.2 U	15	0.3	3.4						
BOP-84i	5/4/2015	0.5 U	0.3	0.2 U	8.9	0.2 U	3.1						
BOP-84i	11/6/2015	0.5 U	0.2 U	0.2 U	2.8	0.2 U	2.1						
BOP-84i	2/4/2016	0.5 U	0.2 U	0.2 U	3.4	0.2 U	2.0						
BOP-84i	5/5/2016	0.5 U	0.2 U	0.2 U	3.8	0.2 U	2.2						
BOP-84i	8/8/2016	0.5 U	0.2 U	0.2 U	4.6	0.2 U	1.7						
BOP-84i	11/4/2016	0.5 U	0.2 U	0.2 U	4.6	0.2 U	1.5 J						
BOP-85i-52	2/8/2012	1.0 U	24	1.8	3.8	1.4	1.0 U						
BOP-85i-58	2/8/2012	1.0 U	33	1.6	6.3	1.6	1.0 U						
BOP-85i-63.5	2/8/2012	1.0 U	34	1.5	6.5	1.8	1.0 U						

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-85i-68.5	2/8/2012	1.0 U	33	1.6	6.5	1.9	1.0 U						
BOP-85i-73.5	2/8/2012	1.0 U	20	1.5	4.3	1.4	1.0 U						
BOP-85i-52	5/4/2012	1.0 U	12	1.0 U	2.2	1.5	1.0 U						
BOP-85i-58	5/4/2012	1.0 U	32	1.0 U	6.4	2.4	1.0 U						
BOP-85i-63.5	5/4/2012	1.0 U	31	1.0 U	6.2	2.3	1.0 U						
BOP-85i-68.5	5/4/2012	1.0 U	29	1.0 U	6.5	2.3	1.0 U						
BOP-85i-73.5	5/4/2012	1.0 U	14	1.0 U	7.8	1.5	1.0 U						
BOP-85i-52	8/9/2012	1.0 U	34	1.4	5.6	1.4	1.0 U						
BOP-85i-58	8/9/2012	1.0 U	34	1.1	6.0	1.4	1.0 U						
BOP-85i-63.5	8/9/2012	1.0 U	31	1.0	5.8	1.4	1.0 U						
BOP-85i-68.5	8/9/2012	1.0 U	32	1.2	5.7	1.4	1.0 U						
BOP-85i-73.5	8/9/2012	1.0 U	3.6	1.0 U	23	1.0	1.0 U						
BOP-85i-52	11/8/2012	0.5 U	15	1.0	1.8	1.6	0.2 U						
BOP-85i-58	11/8/2012	0.5 U	22	1.3	4.8	2.1	0.2 U						
BOP-85i-63.5	11/8/2012	0.5 U	21	1.3	4.5	2.1	0.2 U						
BOP-85i-68.5	11/8/2012	0.5 U	20	0.9	4.3	2.0	0.2 U						
BOP-85i-73.5	11/8/2012	0.5 U	17	0.5	8.2	1.7	0.2 U						
BOP-85i-68.5	2/6/2013	0.5 U	37	0.8	7.0	3.1 J	0.2 U						
BOP-85i	5/2/2013	0.5 U	30	1.1	5.8	1.9	0.2 U						
BOP-85i	8/7/2013	0.5 U	1.5	0.5	22	2.2	0.8						
BOP-85i	11/8/2013	0.5 U	0.2	0.2 U	2.4	0.2 U	2.1						
BOP-85i	11/5/2014	0.5 U	1.6	0.2 U	3.4	0.2	0.4						
BOP-85i	2/3/2015	0.5 U	1.4	0.2 U	5.2	0.2 U	0.3						
BOP-85i	5/4/2015	0.5 U	0.8	0.2 U	5.1	0.2 U	0.4						
BOP-85i	11/6/2015	0.5 U	0.2 U	0.2 U	0.4	0.2 U	0.3						
BOP-85i	2/4/2016	0.5 U	0.2 U	0.2 U	0.7	0.2 U	0.5						
BOP-85i	5/5/2016	0.5 U	0.2 U	0.2 U	1	0.2 U	0.9						
BOP-85i	8/8/2016	0.5 U	0.3	0.2 U	1.3	0.2 U	0.9						
BOP-85i	11/4/2016	0.5 U	0.3	0.2 U	1.3	0.2 U	0.9 J						
BOP-86i-52	2/8/2012	1.0 U	26	1.4	7.2	1.8	1.0 U						
BOP-86i-58	2/8/2012	1.0 U	23	1.2	18	1.8	1.0 U						
BOP-86i-64	2/8/2012	1.0 U	23	1.3	18	1.8	1.0 U						
BOP-86i-69	2/8/2012	1.0 U	21	1.2	17	1.6	1.0 U						
BOP-86i-74.5	2/8/2012	1.0 U	1.0 U	1.0 U	36	1.4	1.0 U						
BOP-86i-52	5/4/2012	1.0 U	28	1.3	4.0	1.6	1.0 U						
BOP-86i-58	5/4/2012	1.0 U	28	1.0	5.0	2.1	1.0 U						
BOP-86i-64	5/4/2012	1.0 U	25	1.0 U	5.0	2.0	1.0 U						
BOP-86i-69	5/4/2012	1.0 U	28	1.0 U	5.2	2.0	1.0 U						
BOP-86i-74.5	5/4/2012	1.0 U	17	1.0 U	8.4	1.8	1.0 U						
BOP-86i-52	8/9/2012	1.0 U	42	1.2	6.9	2.0	1.0 U						
BOP-86i-58	8/9/2012	1.0 U	42	1.2	7.5	2.3	1.0 U						
BOP-86i-64	8/9/2012	1.0 U	41	1.2	7.4	2.3	1.0 U						
BOP-86i-69	8/9/2012	1.0 U	39	1.0	7.7	2.2	1.0 U						
BOP-86i-74.5	8/9/2012	1.0 U	27	1.0 U	12	2.0	1.0 U						
BOP-86i-52	11/8/2012	0.5 U	16	1.3	3.4	1.7	0.4						
BOP-86i-58	11/8/2012	0.5 U	20	1.1	4.0	2.0	0.2						
BOP-86i-64	11/8/2012	0.5 U	20	1.1	3.9	1.9	0.3						
BOP-86i-69	11/8/2012	0.5 U	20	0.9	4.6	1.9	0.5						
BOP-86i-74.5	11/8/2012	0.5 U	24	0.5	10	2.0	1.3						
BOP-86i-69	2/6/2013	0.5 U	31	0.6	6.2	3.2 J	0.2 U						
BOP-86i	5/2/2013	0.5 U	35	0.7	7.4	2.9	0.2 U						
BOP-86i	8/7/2013	0.5 U	9.1	0.6	15	1.5	1.0						

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HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-86i	11/8/2013	0.5 U	1.4	0.2 U	2.0	0.2 U	2.6						
BOP-86i	11/5/2014	0.5 U	0.6	0.2 U	4.6	0.2 U	3.0						
BOP-86i	2/3/2015	0.5 U	0.9	0.2 U	5.5	0.2 U	3.5						
BOP-86i	5/4/2015	0.5 U	3.5	0.2 U	5.0	0.2 U	2.8						
BOP-86i	11/6/2015	0.5 U	0.3	0.2 U	1.6	0.2 U	2.8						
BOP-86i	2/4/2016	0.5 U	0.3	0.2 U	1.9	0.2 U	2.2						
BOP-86I	5/5/2016	0.5 U	0.4	0.2 U	2.0	0.2 U	0.2 U						
BOP-86I	8/8/2016	0.5 U	0.6	0.2 U	2.5	0.2 U	1.7						
BOP-86I	11/4/2016	0.5 U	0.6	0.2 U	2.3	0.2 U	1.6 J						
BOP-87i-52	2/8/2012	1.0 U	14	1.3	1.8	1.3	1.0 U						
BOP-87i-58	2/8/2012	1.0 U	26	1.1	5.4	2.5	1.0 U						
BOP-87i-63.5	2/8/2012	1.0 U	24	1.2	5.1	2.4	1.0 U						
BOP-87i-68.5	2/8/2012	1.0 U	22	1.1	4.7	2.2	1.0 U						
BOP-87i-73.5	2/8/2012	1.0 U	9.6	1.0 U	10	1.2	1.0 U						
BOP-87i-52	5/4/2012	1.0 U	24	1.0 U	1.4	1.0 U	1.0 U						
BOP-87i-58	5/4/2012	1.0 U	13	1.0 U	1.7	1.1	1.0 U						
BOP-87i-63.5	5/4/2012	1.0 U	12	1.0 U	1.8	1.2	1.0 U						
BOP-87i-68.5	5/4/2012	1.0 U	12	1.0 U	2.0	1.4	1.0 U						
BOP-87i-73.5	5/4/2012	1.0 U	14	1.0 U	2.9	1.3	1.0 U						
BOP-87i-52	8/9/2012	1.0	52	2.2	2.6	1.0 U	1.0 U						
BOP-87i-58	8/9/2012	1.0 U	33	1.1	4.2	1.9	1.0 U						
BOP-87i-63.5	8/9/2012	1.0 U	32	1.0 U	4.1	1.8	1.0 U						
BOP-87i-68.5	8/9/2012	1.0 U	31	1.0 U	4.2	1.8	1.0 U						
BOP-87i-73.5	8/9/2012	1.0 U	26	1.0 U	4.1	1.6	1.0 U						
BOP-87i-52	11/8/2012	0.5 U	9.7	1.2	1.6	1.6	0.2 U						
BOP-87i-58	11/8/2012	0.5 U	9.2	1.2	1.6	1.5	0.2 U						
BOP-87i-63.5	11/8/2012	0.5 U	9.1	1.0	1.8	1.5	0.2 U						
BOP-87i-68.5	11/8/2012	0.5 U	6.6	0.5	4.4	1.6	0.2 U						
BOP-87i-73.5	11/8/2012	0.5 U	9.9	1.2	1.3	1.5	0.2 U						
BOP-87i-52	2/6/2013	0.5 U	8.5	0.4	1.2	1.0 J	0.2 U						
BOP-87i	5/2/2013	0.5 U	7.1	0.2	1.2	0.9	0.2 U						
BOP-87i	8/7/2013	0.5 U	21	0.7	6.3	2.0	0.3						
BOP-87i	11/8/2013	0.5 U	0.6	0.2 U	6.2	0.2 U	0.6						
BOP-87i	11/5/2014	0.5 U	0.6	0.2 U	1.5	0.2 U	0.8						
BOP-87i	2/3/2015	0.5 U	2.1	0.2 U	2.2	0.2 U	0.9						
BOP-87i	5/4/2015	0.5 U	1.4	0.2 U	2.8	0.2 U	0.7						
BOP-87i	11/6/2015	0.5 U	0.2 U	0.2 U	0.3	0.2 U	0.5						
BOP-87i	2/4/2016	0.5 U	0.2 U	0.2 U	0.5	0.2 U	0.6						
BOP-87I	5/5/2016	0.5 U	0.2	0.2 U	0.6	0.2 U	1.0						
BOP-87I	8/8/2016	0.5 U	0.3	0.2 U	0.9	0.2 U	0.8						
BOP-87I	11/4/2016	0.5 U	0.3	0.2 U	1.0	0.2 U	0.8 J						
BOP-88i-51	2/8/2012	1.0 U	26	2.0	2.2	1.4	1.0 U						
BOP-88i-56.5	2/8/2012	1.0 U	22	1.7	4.9	1.8	1.0 U						
BOP-88i-61.5	2/8/2012	1.0 U	21	1.8	4.4	1.5	1.0 U						
BOP-88i-66	2/8/2012	1.0 U	20	1.9	4.3	1.6	1.0 U						
BOP-88i-70.5	2/8/2012	1.0 U	20	2.3	7.2	1.6	1.0 U						
BOP-88i-51	5/4/2012	1.0 U	19	1.0 U	2.5	1.2	1.0 U						
BOP-88i-56.5	5/4/2012	1.0 U	13	1.0 U	3.3	1.3	1.0 U						
BOP-88i-61.5	5/4/2012	1.0 U	13	1.0 U	3.6	1.3	1.0 U						
BOP-88i-66	5/4/2012	1.0 U	14	1.0 U	4.5	1.6	1.0 U						
BOP-88i-70.5	5/4/2012	1.0 U	13	1.0 U	5.1	1.5	1.0 U						

APPENDIX D-1
HISTORICAL WATER QUALITY DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
BOP-88i-51	8/9/2012	1.0 U	130	2.8	8.9	1.2	1.0 U						
BOP-88i-56.5	8/9/2012	1.0 U	53	1.8	34	1.2	1.3						
BOP-88i-61.5	8/9/2012	1.0 U	51	1.7	34	1.2	1.2						
BOP-88i-66	8/9/2012	1.0 U	52	1.6	36	1.2	1.3						
BOP-88i-70.5	8/9/2012	1.0 U	51	1.7	36	1.2	1.2						
BOP-88i-51	11/8/2012	0.5 U	11	1.2	1.5	1.5	0.2 U						
BOP-88i-56.5	11/8/2012	0.5 U	8.6	1.1	1.8	1.4	0.7						
BOP-88i-61.5	11/8/2012	0.5 U	8.3	1.1	1.8	1.4	0.7						
BOP-88i-66	11/8/2012	0.5 U	8.4	1.0	1.8	1.5	0.4						
BOP-88i-70.5	11/8/2012	0.5 U	8.1	1.0	2.0	1.4	0.4						
BOP-88i-51	2/6/2013	0.5 U	11	0.9	1.4	1.4 J	0.2						
BOP-88i	5/2/2013	0.5 U	14	0.6	2.2	1.2	1.2						
BOP-88i	6/17/2013	0.5 U	24	0.6	5.4	1.6	5.7	3.3	11.5	1.5	93	5.0 U	5.0 U
BOP-88i	8/7/2013	0.5 U	7.8	0.8	11	1.4	0.2	0.1 U	1.0 U	294	1900	5.0 U	5.0 U
BOP-88i	11/11/2013	0.5 U	0.2	0.2 U	85	0.3	4.1	0.1 U	1.0 U	458	17000	5.0 U	5.0 U
BOP-88i	11/11/2014	0.5 U	1.9	0.2 U	30	0.2	4.2	1.0 U	276	3150	13000	5.0 U	5.0 U
BOP-88i	2/9/2015	0.5 U	12	0.3	90	0.2	4.0	1.0 U	243	3990	12000	5.0 U	5.0 U
BOP-88i	5/6/2015	0.5 U	28	1.0	150	0.4	8.5	1.0 UJ	138	3370	16000	5.0 U	7.4
BOP-88i	11/4/2015	0.5 U	0.8	0.2 U	8.7	0.2 U	2.4						
BOP-88i	2/4/2016	0.5 U	1.6	0.2 U	24	0.2 U	4.1	1.0 U	2270	8570	11000	5.0 U	7.2 J
BOP-88I	5/5/2016	0.5 U	3.3	0.2 U	65	0.2 U	6.8	1.0 U	2370	8780	15000	5.0 U	7.9 J
BOP-88I	8/9/2016	0.5 U	8.9	0.2 U	100	0.2	7.0	4.8	2330	10000	14000	5.0 U	9.3 J
BOP-88I	11/8/2016	1.0 UJ	6.2 J	0.4 UJ	110 J	0.4 UJ	7.4 J	1.1	2620	9830	12000	5.0 U	11
Coolant Release Area Wells													
LAI-4	10/5/2006	200 U	200 U	200 U	200 U	200 U	200 U						
LAI-4	3/12/2007	0.6 U	0.6 U	0.6 U	3.9	0.6 U	0.6 U						
LAI-4	4/5/2007	1.0 U	1.0 U	1.0 U	4.0	1.0 U	1.0 U						
LAI-4	5/11/2007	0.6 U	0.6 U	0.6 U	6.1	0.6 U	0.6 U						
LAI-4	6/13/2007	1.0 U	1.0 U	1.0 U	1.9	1.0 U	1.0 U						
LAI-4	7/12/2007	1.0 U	1.0 U	1.0 U	1.9	1.0 U	1.0 U						
LAI-4	8/16/2007	1.0 U	1.0 U	1.0 U	1.6	1.0 U	1.0 U						
LAI-4	9/7/2007	0.2 U	0.4	0.2 U	2.0	0.2 U	0.2 U						
LAI-4	11/13/2007	0.2 U	0.3	0.2 U	1.4	0.2 U	0.2						
LAI-4	2/5/2008	0.2 U	0.9	0.2	3.3	0.2 U	0.2 U						
LAI-4	5/14/2008	1.0 U	1.0 U	1.0 U	2.2	1.0 U	1.0 U						
LAI-4	8/14/2008	0.2 U	0.7	0.2	2.1	0.2 U	1.1						
LAI-4	11/6/2008	0.6 U	0.6 U	0.6 U	1.7	0.6 U	1.0						
LAI-4	2/5/2009	1.0 U	1.0 U	1.0 U	2.0	1.0 U	1.0 U						
LAI-4	5/7/2009	1.0 U	1.0 U	1.0 U	1.7	1.0 U	1.0 U						
LAI-4	5/5/2010	1.0 U	1.0 U	1.0 U	1.8	1.0 U	1.0 U	0.1 U	0.2				
LAI-4	8/10/2010	1.0 U	1.2	1.0 U	2.2	1.0 U	1.0 U	0.1 U	0.1				
LAI-4	11/16/2010	1.0 U	1.0 U	1.0 U	1.5	1.0 U	1.0 U	0.1 U	0.3				
LAI-4	2/1/2011	1.0 U	1.0 U	1.0 U	1.2	1.0 U	1.0 U	0.1 U	0.2				
LAI-4	5/3/2011	1.0 U	1.0 U	1.0 U	1.0	1.0 U	1.4	0.1 U	1.1				
LAI-4	8/8/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	0.5 U	1.7				
LAI-4	11/1/2011	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.1	0.1 U	0.9				
LAI-4	2/6/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0	40.1				
LAI-4	5/8/2012	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.2	41.5				
LAI-4	8/13/2012	1.0 U	1.7	1.0 U	1.0 U	1.0 U	1.0 U	2.2	6.1				
LAI-4	2/8/2013	0.5 U	1.3	0.2 U	0.7	0.2 U	0.8	0.1 U	1.0 U				
LAI-4	8/20/2013	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.1 U	3.7				
LAI-4	8/18/2014	0.5 U	0.7	0.2 U	0.5	0.2 U	0.2 U	0.10 U	5.0				

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
LAI-4	2/9/2015	0.5 U	0.4	0.2 U	0.2 U	0.2 U	0.2 U	0.68	9.5				
LAI-4	8/12/2015	0.5 U	0.8	0.2 U	0.3	0.2 U	0.2 U	0.25	18.0				
LAI-4	2/5/2016	0.5 U	0.9	0.2 U	0.2	0.2 U	0.2 U	0.55	7.6				
LAI-4	8/4/2016	0.5 U	0.8	0.2 U	0.3	0.2 U	0.2 U	0.10 U	9.1				
LAI-6	10/5/2006	0.2 U	5.6	0.5	7.9	0.2 U	0.2 U						
LAI-6	3/12/2007	0.2 U	7.4	0.5	8.4	0.2 U	0.2 U						
LAI-6	4/4/2007	0.2 U	7.3	0.5	8.2	0.2 U	0.2 U						
LAI-6	5/11/2007	0.2 U	10	0.6	9.4	0.2 U	0.2 U						
LAI-6	6/12/2007	1.0 U	7.8	1.0 U	6.2	1.0 U	1.0 U						
LAI-6	7/11/2007	1.0 U	9.7	1.0 U	6.2	1.0 U	1.0 U						
LAI-6	8/14/2007	0.2 U	7.2	0.5	6.0	0.2 U	0.2 U						
LAI-6	9/7/2007	0.2 U	8.0	0.7	6.0	0.2 U	0.2 U						
LAI-6	11/9/2007	0.2 U	13	0.9	8.8	0.2 U	0.2 U						
LAI-6	2/6/2008	1.0 U	4.5	1.0 U	4.5	1.0 U	1.0 U						
LAI-6	5/14/2008	1.0 U	28	1.8	14	1.0 U	1.0 U						
LAI-6	8/15/2008	0.2 U	14	1.5	6.8	0.2 U	0.2 U						
LAI-6	11/7/2008	0.2 U	16	1.3	5.4	0.2 U	0.2 U						
LAI-6	2/5/2009	1.0 U	21	1.3	9.6	1.0 U	1.0 U						
LAI-6	5/7/2009	1.0 U	3.2	1.0 U	3.2	1.0 U	1.0 U						
LAI-6	8/25/2009	1.0 U	3.2	1.0 U	3.4	1.0 U	1.0 U						
LAI-6	11/9/2009	1.0 U	3.0	1.0 U	3.0	1.0 U	1.0 U	1.6	8.2				
LAI-6	2/8/2010	1.0 U	5.3	1.0 U	7.3	1.0 U	1.0 U	1.7	7.9				
LAI-6	5/5/2010	1.0 U	9.8	1.0 U	13	1.0 U	1.0 U	1.5	7.3				
LAI-6	8/10/2010	1.0 U	3.4	1.0 U	3.1	1.0 U	1.0 U						
LAI-6	11/16/2010	1.0 U	3.0	1.0 U	3.1	1.0 U	1.0 U	1.8	8.6				
LAI-6	2/1/2011	1.0 U	5.7	1.0 U	7.5	1.0 U	1.0 U	1.8	8.7				
LAI-6	5/3/2011	1.0 U	1.0 U	1.0 U	1.0	1.0 U	1.4	1.8	8.7				
LAI-6	8/10/2011	1.0 U	4.7	1.0 U	4.7	1.0 U	1.0 U						
LAI-6	11/1/2011	1.0 U	2.1	1.0 U	2.2	1.0 U	1.0 U	1.7	8.9				
LAI-6	5/8/2012	1.0 U	1.7	1.0 U	1.6	1.0 U	1.0 U	1.8	11.9				
LAI-6	8/13/2012	1.0 U	1.5	1.0 U	1.4	1.0 U	1.0 U						
LAI-7	10/4/2006	0.2 U	1.2	0.6	3.0	0.2 U	0.2 U						
LAI-7	3/14/2007	0.2 U	6.7	2.1	23	0.2 U	0.2 U						
LAI-7	4/4/2007	0.2 U	6.9	3.4	21	0.2 U	0.2 U						
LAI-7	5/10/2007	0.2 U	6.6	2.3	22	0.2 U	0.2 U						
LAI-7	6/12/2007	1.0 U	4.3	1.4	12	1.0 U	1.0 U						
LAI-7	7/12/2007	1.0 U	4.3	1.9	14	1.0 U	1.0 U						
LAI-7	8/13/2007	0.2 U	5.4	2.2	15	0.2 U	0.2 U						
LAI-7	9/7/2007	0.2 U	3.7	1.4	23	0.2 U	0.2 U						
LAI-7	11/9/2007	0.6 U	2.8	1.0	30	0.6 U	0.6 UJ						
LAI-7	2/6/2008	1.0 U	5.2	1.2	43	1.0 U	1.0 U						
LAI-7	5/13/2008	0.2 U	7.4	2.2	47	0.2 U	0.2 U						
LAI-7	8/14/2008	0.2 U	6.6	1.9	60	0.2 U	0.2 U						
LAI-7	11/6/2008	0.2 U	5.2	1.5	73	0.2 U	0.2						
LAI-7	2/4/2009	1.0 U	8.7	2.1	56	1.0 U	1.0 U						
LAI-7	5/7/2009	1.0 U	7.2	2.2	110	1.0 U	3.4						
LAI-7	8/25/2009	1.0 U	13	6.1	83	1.0 U	1.0 U	0.2	12.1				
LAI-7	11/9/2009	1.0 U	14	7.4	56	1.0 U	1.0 U	0.5	17.1				
LAI-7	2/8/2010	1.0 U	12	7.5	70	1.0 U	1.0 U	0.8	14.4				
LAI-7	5/5/2010	1.0 U	14	12	22	1.0 U	1.0 U	1.4	17.3				
LAI-7	8/10/2010	1.0 U	13	12	10	1.0 U	1.0 U	1.2	18.4				

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Location	Sample Sample	1,1,1TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	VC (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)
LAI-7	11/16/2010	1.0 U	12	11	14	1.0 U	1.0 U	1.3	19.5				
LAI-7	2/1/2011	1.0 U	15	14	22	1.0 U	1.0 U	2.1	22.1				
LAI-7	5/3/2011	1.0 U	12	11	9.3	1.0 U	1.0 U	4.2	26.2				
LAI-7	8/8/2011	1.0 U	11	9.7	6.0	1.0 U	1.0 U	4.1	27				
LAI-7	11/1/2011	1.0 U	11	9.9	7.9	1.0 U	1.0 U	0.5	27.4				
LAI-7	2/6/2012	1.0 U	9.3	6.7	7.1	1.0 U	1.0 U	3.8	35.4				
LAI-7	5/8/2012	1.0 U	9.5	6.9	3.8	1.0 U	1.0 U	4.8	24.6				
LAI-7	8/13/2012	1.0 U	9.5	13	3.4	1.0 U	1.0 U	0.8	20.9				
LAI-7	2/8/2013	0.5 U	6.3	5.9	4.6	0.2 U	0.2 U	3.2	19.8				
LAI-7	8/20/2013	0.5 U	3.0	3.0	2.3	0.2 U	0.2 U	0.1 U	13.4				
LAI-7	8/18/2014	0.5 U	6.8	9.7	2.1	0.2 U	0.2 U	3.0	15.1				
LAI-7	2/9/2015	0.5 U	7.2	4.6	3.4	0.2 U	0.2 U	4.8	17.6				
LAI-7	8/12/2015	0.5 U	3.6	1.5	1.6	0.2 U	0.2 U	2.3	19.5				
LAI-7	2/5/2016	0.5 U	5.1	2.0	2.1	0.2 U	0.2 U	2.9	16.0				
LAI-7	8/4/2016	0.5 U	4.8	2.7	1.6	0.2 U	0.2 U	3.9	15				

mg/L = milligrams per liter
µg/L = micrograms per liter
TCA = tricloroethane
TCE = trichloroethene
PCE = tetrachloroethene
DCE = dichloroethene
TOC = total organic carbon

U = Indicates the compound was not detected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
B = Possible/probable method blank contamination.
E = Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
M = Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.

APPENDIX D-2
HISTORICAL COOLANT RELEASE
TPH-D GROUNDWATER DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	SDG	Lab ID	Date Collected	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx
TGA Wells						
BOP-9(i)		JZ78L	10/5/2006	0.25 U	0.50 U	ND
BOP-9(i)		KA53K	10/11/2006	0.25 U	0.50 U	ND
BOP-9(i)		KB36A	10/17/2006	0.25 U	0.50 U	ND
BOP-9(i)		MW97A	5/15/2008	0.25 U	0.50 U	ND
BOP-9(i)		NK79A	8/14/2008	0.25 U	0.50 U	ND
BOP-9(i)		NZ33F	11/7/2008	0.25 U	0.50 U	ND
BOP-9(i)		OL90C	2/9/2009	0.25 U	0.50 U	ND
BOP-9(i)		PL17B	8/18/2009	0.25 U	0.50 U	ND
BOP-9(i)		RI22A	8/11/2010	0.10 U	0.20 U	ND
BOP-9(i)		TH33A	8/3/2011	0.25 U	0.50 U	ND
BOP-10(i)		0609147-07	9/26/2006	0.239 U	0.477 U	ND
BOP-10(i)		JZ50F	10/4/2006	0.25 U	0.50 U	ND
BOP-10(i)		KA53J	10/11/2006	0.25 U	0.50 U	ND
BOP-10(i)		KB36C	10/17/2006	0.25 U	0.50 U	ND
BOP-10(i)		KC72B	10/26/2006	0.25 U	0.50 U	ND
BOP-10(i)		KG99C	11/28/2006	0.25 U	0.50 U	ND
BOP-10(i)		KJ31A	12/18/2006	0.25 U	0.50 U	ND
BOP-10(i)		KM86H	1/30/2007	0.25 U	0.50 U	ND
BOP-10(i)		KP62B	2/26/2007	0.25 U	0.50 U	ND
BOP-10(i)		KR44H	3/14/2007	0.25 U	0.50 U	ND
BOP-10(i)		KU08B	4/3/2007	0.25 U	0.50 U	ND
BOP-10(i)		KZ14B	5/15/2007	0.25 U	0.50 U	ND
BOP-10(i)		LD26H	6/12/2007	0.25 U	0.50 U	ND
BOP-10(i)		LH50J	7/13/2007	0.25 U	0.50 U	ND
BOP-10(i)		LM13D	8/16/2007	0.25 U	0.50 U	ND
BOP-10(i)		LO84A	9/6/2007	0.25 U	0.50 U	ND
BOP-10(i)		LY03M	11/13/2007	0.25 U	0.50 U	ND
BOP-10(i)		MI48H	2/7/2008	0.25 U	0.50 U	ND
BOP-10(i)		MW97B	5/14/2008	0.25 U	0.50 U	ND
BOP-10(i)-Dup		MW97C	5/14/2008	0.25 U	0.50 U	ND
BOP-10(i)		NK49A	8/12/2008	0.25 U	0.50 U	ND
BOP-10(i)		NZ33D	11/7/2008	0.25 U	0.50 U	ND
BOP-10(i)		OL46E	2/5/2009	0.25 U	0.50 U	ND
BOP-10(i)		PL17A	8/18/2009	0.25 U	0.50 U	ND
BOP-10(i)		RI22B	8/11/2010	0.10 U	0.20 U	ND
BOP-10(i)		TI24H	8/10/2011	0.25 U	0.50 U	ND
BOP-10(s)		0609147-08	9/26/2006	0.795 J	0.475 UJ	0.795
BOP-10(s)		JZ50E	10/4/2006	0.48	0.50 U	0.48
BOP-10(s)		KA53I	10/11/2006	0.25 U	0.50 U	ND
BOP-10(s)		KB36D	10/17/2006	0.25 U	0.50 U	ND
BOP-10(s)		KC72A	10/26/2006	0.25 U	0.50 U	ND
BOP-10(s)		KG99B	11/28/2006	0.25 U	0.50 U	ND
BOP-10(s)		KJ31B	12/18/2006	0.25 U	0.50 U	ND
BOP-10(s)		KM86G	1/30/2007	0.25 U	0.50 U	ND
BOP-10(s)		KP62A	2/26/2007	0.25 U	0.50 U	ND
BOP-10(s)		KR44I	3/14/2007	0.25 U	0.50 U	ND
BOP-10(s)		KU08C	4/3/2007	0.25 U	0.50 U	ND
BOP-10(s)		KZ14A	5/15/2007	0.25 U	0.50 U	ND
BOP-10(s)		LD26G	6/12/2007	0.25 U	0.50 U	ND
BOP-10(s)		LH50K	7/13/2007	0.25 U	0.50 U	ND
BOP-10(s)		LM13E	8/16/2007	0.25 U	0.50 U	ND
BOP-10(s)		LO84B	9/6/2007	0.25 U	0.50 U	ND
BOP-10(s)		LY03L	11/13/2007	0.25 U	0.50 U	ND
BOP-10(s)		MI48I	2/7/2008	0.25 U	0.50 U	ND
BOP-10(s)		MW97D	5/15/2008	0.25 U	0.50 U	ND
BOP-10(s)		NK79B	8/14/2008	0.25 U	0.50 U	ND
BOP-10(s)		NY53F	11/4/2008	0.25 U	0.50 U	ND
BOP-10(s)		OL46D	2/5/2009	0.25 U	0.50 U	ND
BOP-56(i)		JZ78M	10/5/2006	0.25 U	0.50 U	ND
BOP-56(i)		KA53L	10/11/2006	0.25 U	0.50 U	ND
BOP-56(i)		KB36E	10/17/2006	0.25 U	0.50 U	ND
BOP-56(i)		KC72C	10/26/2006	0.25 U	0.50 U	ND
BOP-56(i)		KG99A	11/28/2006	0.25 U	0.50 U	ND
BOP-56(i)		KJ31G	12/19/2006	0.25 U	0.50 U	ND
BOP-56(i)		KM86J	1/30/2007	0.25 U	0.50 U	ND

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Location	SDG	Lab ID	Date Collected	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx
BOP-56(i)		KP77E	2/27/2007	0.25 U	0.50 U	ND
BOP-56(i)		KR44D	03/13/2007	0.25 U	0.50 U	ND
BOP-56(i)		KU08N	04/05/2007	0.25 U	0.50 U	ND
BOP-56(i)		KZ14E	05/15/2007	0.25 U	0.50 U	ND
BOP-56(i)		LD26K	06/13/2007	0.25 U	0.50 U	ND
BOP-56(i)		LH50F	07/13/2007	0.25 U	0.50 U	ND
BOP-56(i)		LM13A	08/14/2007	0.25 U	0.50 U	ND
BOP-56(i)		---	09/07/2007	NA	NA	NA
BOP-56(i)		LY03I	11/13/2007	0.25 U	0.50 U	ND
BOP-56(i)		MI48K	02/07/2008	0.25 U	0.50 U	ND
BOP-56(i)		MW70D	05/14/2008	0.25 U	0.50 U	ND
BOP-56(i)		NK79C	08/14/2008	0.25 U	0.50 U	ND
BOP-56(i)		NY53C	11/04/2008	0.25 U	0.50 U	ND
BOP-56(i)		OL90B	02/10/2009	0.25 U	0.50 U	ND
BOP58(i)		0609036-05	9/10/2006	0.240 U	0.480 U	ND
BOP58(i)		KC72D	10/26/2006	0.25 U	0.50 U	ND
BOP58(i)		MW97E	5/15/2008	0.25 U	0.50 U	ND
BOP58(i)		NK79D	8/14/2008	0.25 U	0.50 U	ND
BOP58(i)		NZ33E	11/7/2008	0.25 U	0.50 U	ND
BOP58(i)		OL90A	2/10/2009	0.25 U	0.50 U	ND
BOP59(i)		0609036-03	9/10/2006	0.261 U	0.522 U	ND
BOP59(i)		0609147-05	9/26/2006	0.238 U	0.475 U	ND
BOP59(i)		JZ50G	10/4/2006	0.25 U	0.50 U	ND
BOP59(i)		KA53M	10/11/2006	0.25 U	0.50 U	ND
BOP59(i)		KB36B	10/17/2006	0.25 U	0.50 U	ND
BOP59(i)		KC41I	10/24/2006	0.25 U	0.50 U	ND
BOP59(i)		---	11/28/2006	NA	NA	NA
BOP59(i)		KH16G	11/30/2006	0.25 U	0.50 U	ND
BOP59(i)		KJ31C	12/18/2006	0.25 U	0.50 U	ND
BOP59(i)		KM86K	1/30/2007	0.25 U	0.50 U	ND
BOP59(i)		KP62C	2/26/2007	0.25 U	0.50 U	ND
BOP59(i)		KR44F	3/14/2007	0.25 U	0.50 U	ND
BOP59(i)		KU08F	4/4/2007	0.25 U	0.50 U	ND
BOP59(i)		KZ14D	5/15/2007	0.25 U	0.50 U	ND
BOP59(i)		LD26I	6/12/2007	0.25 U	0.50 U	ND
BOP59(i)		LH50I	7/13/2007	0.25 U	0.50 U	ND
BOP59(i)		LL12A	8/8/2007	0.25 U	0.50 U	ND
BOP59(i)		LO84C	9/6/2007	0.25 U	0.50 U	ND
BOP59(i)		LY03J	11/13/2007	0.25 U	0.50 U	ND
BOP59(i)		MI48M	2/7/2008	0.25 U	0.50 U	ND
BOP59(i)		MW97F	5/15/2008	0.25 U	0.50 U	ND
BOP59(i)		NK79E	8/14/2008	0.25 U	0.50 U	ND
BOP59(i)		NY53E	11/4/2008	0.25 U	0.50 U	ND
BOP59(i)		OL46F	2/5/2009	0.25 U	0.50 U	ND
BOP59(i)		PL17D	8/19/2009	0.25 U	0.50 U	ND
BOP59(i)		RI22C	8/11/2010	0.10 U	0.20 U	ND
BOP59(i)		TI24I	8/10/2011	0.25 U	0.50 U	ND
DP1		0609036-02	9/10/2006	0.240 U	0.480 U	ND
DP1		0609147-04	9/26/2006	0.238 U	0.476 U	ND
DP1		JZ78I	10/5/2006	0.25 U	0.50 U	ND
DP1		KA53H	10/11/2006	0.25 U	0.50 U	ND
DP1		KB23D	10/16/2006	0.25 U	0.50 U	ND
DP1		KC41H	10/24/2006	0.25 U	0.50 U	ND
DP1		KG99H	11/29/2006	0.25 U	0.50 U	ND
DP1		KJ31E	12/18/2006	0.25 U	0.50 U	ND
DP1		KM86A	1/29/2007	0.25 U	0.50 U	ND
DP1		KP62K	2/26/2007	0.25 U	0.50 U	ND
DP1		KR44B	03/13/2007	0.25 U	0.50 U	ND
DP1		KU08D	04/04/2007	0.25 U	0.50 U	ND
DP1		KY63E	05/10/2007	0.25 U	0.50 U	ND
DP1		LD26Q	06/13/2007	0.25 U	0.50 U	ND
DP1		LH50A	07/13/2007	0.25 U	0.50 U	ND
DP1		LL12E	08/08/2007	0.25 U	0.50 U	ND
DP1		---	09/07/2007	NA	NA	NA
DP1		LX28B	11/07/2007	0.25 U	0.50 U	ND
DP1		MI48N	02/11/2008	0.25 U	0.50 U	ND

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				NWTPH-Dx (mg/L) (a)		
Location	SDG	Lab ID	Date Collected	Diesel	Motor Oil	Total TPH-Dx
DP1		MW70I	05/14/2008	0.25 U	0.50 U	ND
DP1		NK49E	08/12/2008	0.25 U	0.50 U	ND
DP1		NY53H	11/05/2008	0.25 U	0.50 U	ND
DP1		OL23B	2/4/2009	0.25 U	0.50 U	ND
DP1		PL17C	8/19/2009	0.25 U	0.50 U	ND
DP1		RI00A	8/9/2010	0.25 U	0.50 U	ND
DP1		TI24G	8/10/2011	0.25 U	0.50 U	ND
DP1		VF68H	8/13/2012	0.25 U	0.50 U	ND
E-6		0609036-01	9/10/2006	0.367	0.480 U	0.367
E-6		0609067-01	9/13/2006	0.681 U	0.498 U	0.681
E-6		0609147-06	9/26/2006	0.237 U	0.473 U	ND
E-6		JZ78F	10/5/2006	0.25 U	0.50 U	ND
E-6		KA39C	10/10/2006	0.25 U	0.50 U	ND
E-6		KB36L	10/17/2006	0.25 U	0.50 U	ND
E-6		KC41E	10/24/2006	0.25 U	0.50 U	ND
E-6		KG99E	11/29/2006	0.25 U	0.50 U	ND
E-6		KJ31F	12/18/2006	0.25 U	0.50 U	ND
E-6		KM86B	1/29/2007	0.25 U	0.50 U	ND
E-6		KP62H	2/26/2007	0.25 U	0.50 U	ND
E-6		KR44C	03/13/2007	0.25 U	0.50 U	ND
E-6		KU08Q	04/04/2007	0.25 U	0.50 U	ND
E-6		KY63D	05/10/2007	0.25 U	0.50 U	ND
E-6		LD26N	06/13/2007	0.25 U	0.50 U	ND
E-6		LH50E	07/13/2007	0.25 U	0.50 U	ND
E-6		LL12B	08/08/2007	0.25 U	0.50 U	ND
E-6		LO84M	09/07/2007	0.25 U	0.50 U	ND
E-6		LX28D	11/08/2007	0.25 U	0.50 U	ND
E-6		MI48O	02/11/2008	0.25 U	0.50 U	ND
E-6		MW70F	05/14/2008	0.25 U	0.50 U	ND
E-6		NK49B	08/12/2008	0.25 U	0.50 U	ND
E-6		NY67A	11/06/2008	0.25 U	0.50 U	ND
E-6		OM44A	02/12/2009	0.25 U	0.50 U	ND
E-7		0609036-04	9/10/2006	0.237 U	0.475 U	ND
E-7		0609156-02	9/27/2006	0.237 U	0.474 U	ND
E-7		JZ78G	10/5/2006	0.25 U	0.50 U	ND
E-7		KA53F	10/11/2006	0.25 U	0.50 U	ND
E-7		KB36M	10/17/2006	0.25 U	0.50 U	ND
E-7		KC41G	10/24/2006	0.25 U	0.50 U	ND
E-7		KG99F	11/29/2006	0.25 U	0.50 U	ND
E-7		KJ51D	12/19/2006	0.25 U	0.50 U	ND
E-7		KM86C	1/29/2007	0.25 U	0.50 U	ND
E-7		KP62I	2/26/2007	0.25 U	0.50 U	ND
E-7		KR44J	3/14/2007	0.25 U	0.50 U	ND
E-7		KU08R	4/5/2007	0.25 U	0.50 U	ND
E-7		KY63C	5/10/2007	0.25 U	0.50 U	ND
E-7		LD26O	6/13/2007	0.25 U	0.50 U	ND
E-7		LH50B	7/13/2007	0.25 U	0.50 U	ND
E-7		LM13F	8/16/2007	0.25 U	0.50 U	ND
E-7		LO84N	9/7/2007	0.25 U	0.50 U	ND
E-7		LX28E	11/8/2007	0.25 U	0.50 U	ND
E-7		MI48P	2/11/2008	0.25 U	0.50 U	ND
E-7		MW70G	5/14/2008	0.25 U	0.50 U	ND
E-7		NK49C	8/12/2008	0.25 U	0.50 U	ND
E-7		NY53B	11/4/2008	0.25 U	0.50 U	ND
E-7		OL23A	2/4/2009	0.25 U	0.50 U	ND
E-8		JZ78H	10/5/2006	0.25 U	0.50 U	ND
E-8		KA53G	10/11/2006	0.25 U	0.50 U	ND
E-8		KB36K	10/17/2006	0.25 U	0.50 U	ND
E-8		KC41F	10/24/2006	0.25 U	0.50 U	ND
E-8		KG99G	11/29/2006	0.25 U	0.50 U	ND
E-8		KJ51E	12/19/2006	0.25 U	0.50 U	ND
E-8		KM86D	1/29/2007	0.25 U	0.50 U	ND
E-8		KP62J	2/26/2007	0.25 U	0.50 U	ND
E-8		KR44K	3/14/2007	0.25 U	0.50 U	ND
E-8		KU08O	4/5/2007	0.25 U	0.50 U	ND
E-8		KY63A	5/10/2007	0.25 U	0.50 U	ND

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				NWTPH-Dx (mg/L) (a)		
Location	SDG	Lab ID	Date Collected	Diesel	Motor Oil	Total TPH-Dx
E-8		LD26P	6/13/2007	0.25 U	0.50 U	ND
E-8		LH50D	7/13/2007	0.25 U	0.50 U	ND
E-8		LL12D	8/8/2007	0.25 U	0.50 U	ND
E-8		LO84O	9/7/2007	0.25 U	0.50 U	ND
E-8		LX28C	11/8/2007	0.25 U	0.50 U	ND
E-8		MI48Q	2/11/2008	0.25 U	0.50 U	ND
E-8		MW70H	5/14/2008	0.25 U	0.50 U	ND
E-8		NK49D	8/12/2008	0.25 U	0.50 U	ND
E-8		NY53G	11/5/2008	0.25 U	0.50 U	ND
E-8		OM44B	2/12/2009	0.25 U	0.50 U	ND
LAI-1		0609075-01	9/14/2006	0.252 U	0.504 U	ND
LAI-1		0609156-01	9/27/2006	0.237 U	0.473 U	ND
LAI-1		JZ50B	10/4/2006	0.25 U	0.50 U	ND
LAI-1		KA53A	10/11/2006	0.25 U	0.50 U	ND
LAI-1		KB36F	10/17/2006	0.25 U	0.50 U	ND
LAI-1		KC12D	10/23/2006	0.25 U	0.50 U	ND
LAI-1		KH16A	11/30/2006	0.25 U	0.50 U	ND
LAI-1		KJ51A	12/19/2006	0.25 U	0.50 U	ND
LAI-1		KM86N	1/29/2007	0.25 U	0.50 U	ND
LAI-1		KP62G	2/26/2007	0.25 U	1.6	1.6
LAI-1		KR44N	3/14/2007	0.25 U	0.50 U	ND
LAI-1		KU08H	4/4/2007	0.25 U	0.50 U	ND
LAI-1		KY63F	5/10/2007	0.25 U	0.50 U	ND
LAI-1		LD26A	6/12/2007	0.25 U	0.50 U	ND
LAI-1		LH13A	7/11/2007	0.25 U	0.50 U	ND
LAI-1		LL12G	8/13/2007	0.25 U	0.50 U	ND
LAI-1		LO84G	9/7/2007	0.25 U	0.50 U	ND
LAI-1		LY03A	11/9/2007	0.25 U	0.50 U	ND
LAI-1		MI48E	2/6/2008	0.25 U	0.50 U	ND
LAI-1		MW40C	5/13/2008	0.25 U	0.84	0.84
LAI-1		NK72A	8/14/2008	0.25 U	0.90	0.90
LAI-1		NY67B	11/6/2008	0.25 U	0.50 U	ND
LAI-1		OL23D	2/4/2009	0.25 U	0.50 U	ND
LAI-1		OY58A	5/11/2009	0.25 U	0.50 U	ND
LAI-1		PM01A	8/26/2009	0.25 U	0.50 U	ND
LAI-1		PW95A	11/9/2009	0.25 U	0.50 U	ND
LAI-1		QJ00A	2/8/2010	0.25 U	0.50 U	ND
LAI-1		QV64A	5/6/2010	0.25 U	0.50 U	ND
LAI-1		RI00C	8/10/2010	0.25 U	0.50 U	ND
LAI-1		RW94A	11/16/2010	0.25 U	0.50 U	ND
LAI-1		SH11A	2/1/2011	0.25 U	0.50 U	ND
LAI-1		SV29A	5/3/2011	0.25 U	0.50 U	ND
LAI-1		TI24A	8/10/2011	0.25 U	0.50 U	ND
LAI-1		TU94A	11/01/2011	0.25 U	0.50 U	ND
LAI-1		UH34A	2/6/2012	0.25 U	0.50 U	ND
LAI-1		UT72A	5/8/2012	0.25 U	0.50 U	ND
LAI-1		VF68A	8/13/2012	0.25 U	0.50 U	ND
LAI-1	1413033	7168731	8/20/2013	0.095 UJ	0.24 U	ND
LAI-1	1496925	7569331	8/18/2014	0.38	2.4	2.78
LAI-1	1584434	8004608	8/12/2015	0.095 U	0.24 U	ND
LAI-1	1691407	8510419	8/3/2016	0.095 U	0.24 U	ND
LAI-2		0609075-02	9/14/2006	0.247 U	0.494 U	ND
LAI-2		0609147-02	9/25/2006	0.477	0.473 U	0.477
LAI-2		JZ50C	10/4/2006	0.25 U	0.50 U	ND
LAI-2		KA53B	10/11/2006	0.25 U	0.50 U	ND
LAI-2		KB36G	10/17/2006	0.25 U	0.50 U	ND
LAI-2		KC41A	10/24/2006	0.25 U	0.50 U	ND
LAI-2		KH16B	11/30/2006	0.25 U	0.50 U	ND
LAI-2		KJ31H	12/19/2006	0.25 U	0.50 U	ND
LAI-2		KM86P	1/29/2007	0.25 U	0.50 U	ND
LAI-2		KP62F	2/26/2007	0.25 U	0.64	0.64
LAI-2		KR04D	3/12/2007	0.25 U	0.50 U	ND
LAI-2		KU08I	4/4/2007	0.25 U	0.50 U	ND
LAI-2		KY63G	5/10/2007	0.25 U	0.50 U	ND
LAI-2		LD26B	6/12/2007	0.25 U	0.50 U	ND
LAI-2		LH13B	7/11/2007	0.25 U	0.50 U	ND

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				NWTPH-Dx (mg/L) (a)		
Location	SDG	Lab ID	Date Collected	Diesel	Motor Oil	Total TPH-Dx
LAI-2		LL12H	8/13/2007	0.25 U	0.81	0.81
LAI-2		LO84H	9/7/2007	0.25 U	0.81 U	ND
LAI-2		LY03B	11/9/2007	0.25 U	0.50 U	ND
LAI-2		MI48D	2/6/2008	0.25 U	0.50 U	ND
LAI-2		MW40E	5/13/2008	0.25 U	0.50 U	ND
LAI-2		NK99B	8/15/2008	0.25 U	0.50 U	ND
LAI-2		NZ31A	11/7/2008	0.25 U	0.77	0.77
LAI-2		OL23E	2/4/2009	0.25 U	1.2	1.2
LAI-2		OY58B	5/11/2009	0.25 U	0.50 U	ND
LAI-2		PM01B	8/26/2009	0.25 U	0.50 U	ND
LAI-2		PW95B	11/9/2009	0.25 U	0.50 U	ND
LAI-2		QJ00B	2/8/2010	0.25 U	0.50 U	ND
LAI-2		QV64B	5/6/2010	0.25 U	0.50 U	ND
LAI-2		RI00D	8/10/2010	0.25 U	0.50 U	ND
LAI-2		RW94B	11/16/2010	0.25 U	0.50 U	ND
LAI-2		SH11B	2/1/2011	0.25 U	0.50 U	ND
LAI-2		SV29B	5/3/2011	0.25 U	0.50 U	ND
LAI-2		TI24B	8/10/2011	0.25 U	0.50 U	ND
LAI-2		TU94B	11/01/2011	0.25 U	0.50 U	ND
LAI-2		UH34B	2/6/2012	0.25 U	0.50 U	ND
LAI-2		UT72B	5/8/2012	0.25 U	0.50 U	ND
LAI-2		VF68B	8/13/2012	0.25 U	0.50 U	ND
LAI-2	1413033	7168732	8/20/2013	0.098 UJ	0.24 U	ND
LAI-2	1496925	7569332	8/18/2014	0.097 U	0.24 U	ND
LAI-2	1584434	8004609	8/12/2015	0.095 U	0.24 U	ND
LAI-2	1691407	8510420	8/3/2016	0.10 U	0.25 U	ND
LAI-3		0609075-03	9/14/2006	0.248 U	0.495 U	ND
LAI-3		0609147-01	9/25/2006	0.605	0.473 U	0.605
LAI-3		JZ78A	10/5/2006	0.25 U	0.50 U	ND
LAI-3		KA53C	10/11/2006	0.25 U	0.50 U	ND
LAI-3		KB36H	10/17/2006	0.25 U	0.50 U	ND
LAI-3		KC41B	10/24/2006	0.25 U	0.50 U	ND
LAI-3		KH16C	11/30/2006	0.25 U	0.50 U	ND
LAI-3		KJ51B	12/19/2006	0.25 U	0.50 U	ND
LAI-3		KM86Q	1/29/2007	0.25 U	0.50 U	ND
LAI-3		KP77B	2/27/2007	0.25 U	0.54	0.54
LAI-3		KR44O	3/14/2007	0.25 U	0.50 U	ND
LAI-3		KU08J	4/4/2007	0.25 U	0.50 U	ND
LAI-3		KY63H	5/10/2007	0.25 U	0.50 U	ND
LAI-3		LD26C	6/12/2007	0.25 U	0.50 U	ND
LAI-3		LH13C	7/11/2007	0.25 U	0.50 U	ND
LAI-3		LL12I	8/13/2007	0.25 U	0.50 U	ND
LAI-3		LO84I	9/7/2007	0.25 U	0.50 U	ND
LAI-3		LY03C	11/9/2007	0.25 U	0.50 U	ND
LAI-3		MI48C	2/6/2008	0.25 U	0.50 U	ND
LAI-3		MW40D	5/13/2008	0.25 U	0.50 U	ND
LAI-3		NK99A	8/15/2008	0.25 U	0.50 U	ND
LAI-3		NZ31B	11/7/2008	0.25 U	0.50 U	ND
LAI-3		OL23F	2/4/2009	0.25 U	0.50 U	ND
LAI-3		OY58C	5/11/2009	0.25 U	0.50 U	ND
LAI-3		PL91A	8/25/2009	0.25 U	0.50 U	ND
LAI-3		PW95C	11/9/2009	0.25 U	0.50 U	ND
LAI-3		QJ00C	2/8/2010	0.25 U	0.50 U	ND
LAI-3		QV64C	5/6/2010	0.25 U	0.50 U	ND
LAI-3		RI00E	8/10/2010	0.25 U	0.50 U	ND
LAI-3		RW94C	11/16/2010	0.25 U	0.50 U	ND
LAI-3		SH11C	2/1/2011	0.25 U	0.50 U	ND
LAI-3		SV29C	5/3/2011	0.25 U	0.50 U	ND
LAI-3		TI24C	8/10/2011	0.25 U	0.50 U	ND
LAI-3		TU94C	11/01/2011	0.25 U	0.50 U	ND
LAI-3		UH34C	2/6/2012	0.25 U	0.50 U	ND
LAI-3		UT72C	5/8/2012	0.25 U	0.50 U	ND
LAI-3		VF68C	8/13/2012	0.25 U	0.50 U	ND
LAI-3	1413033	7168733	8/20/2013	0.098 UJ	0.24 U	ND
LAI-3	1496925	7569333	8/18/2014	0.12	0.24 U	0.12
LAI-3	1584434	8004611	8/12/2015	0.098	0.24 U	0.098
LAI-3	1691407	8510421	8/3/2016	0.095 U	0.24 U	ND

APPENDIX D-2
HISTORICAL COOLANT RELEASE
TPH-D GROUNDWATER DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	SDG	Lab ID	Date Collected	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx
LAI-4-22		0609054-09	9/12/2006	16,600	15,200	31,800
LAI-4		0609147-12	9/26/2006	913	783	1696
LAI-4		JZ78B	10/5/2006	3600	3900	7500
LAI-4		KA39A	10/10/2006	8300	9100	17,400
LAI-4		KB23A	10/16/2006	5700	6000	11,700
LAI-4		KC12A	10/23/2006	5400	6300	11,700
LAI-4		KF84A	11/16/2006	630	880	1,510
LAI-4		KG99K	11/29/2006	130	190	320
LAI-4		KH70A	12/5/2006	110	160	270
LAI-4		KJ51G	12/20/2006	140	220	360
LAI-4		KM86R	1/30/2007	51	66	117
LAI-4		KP77A	2/27/2007	49	64	113
LAI-4		KR04C	3/12/2007	47	67	114
LAI-4		KU08T	4/4/2007	92	130	222
LAI-4		KZ12B	5/11/2007	93	140	233
LAI-4		LD26S	6/13/2007	49	71	120
LAI-4		LH13D	7/12/2007	43	59	102
LAI-4		LM13G	8/16/2007	37	53	90
LAI-4		LO84K	9/7/2007	48	73	121
LAI-4		LY03H	11/13/2007	53	73	126
LAI-4		MH73F	2/5/2008	26	36	62
LAI-4		MO93A	3/25/2008	12	14	26
LAI-4		MT19C	4/21/2008	20	26	46
LAI-4		MW70A	5/14/2008	17	24	41
LAI-4		NC71A	6/24/2008	61	100 U	61
LAI-4		NF56A	7/14/2008	39	52	91
LAI-4		NK72C	8/14/2008	15	19	34
LAI-4		NP40A	9/16/2008	27	31	58
LAI-4		NW90A	10/28/2008	13	19	32
LAI-4		NY67D	11/6/2008	24	29	53
LAI-4		OE69A	12/16/2008	31	34	65
LAI-4		OK51A	1/29/2009	63	68	131
LAI-4		OL46A	2/5/2009	46	56	102
LAI-4		OQ49B	3/12/2009	46	47	93
LAI-4		OV50B	4/14/2009	29	35	64
LAI-4		OY30A	5/7/2009	15	18	33
LAI-4		---	6/3/2009	Dry in June 2009		
LAI-4		---	8/25/2009			
LAI-4		---	2/8/2010			
LAI-4		QP43A	3/23/2010	12	14	26
LAI-4		QV48A	5/5/2010	32	52	84
LAI-4		RI00F	8/10/2010	11	16	27
LAI-4		RW94D	11/16/2010	34	49	83
LAI-4		SH11D	2/1/2011	23	26	49
LAI-4		SV29D	5/3/2011	28	40	68
LAI-4		TH69A	8/8/2011	4.3	3.9	8.2
LAI-4		TU94D	11/01/2011	26	24	50
LAI-4		UH34D	2/6/2012	2.2	2.1	4.3
LAI-4		UT72D	5/8/2012	1.2	1.9	3.1
LAI-4		VF68D	8/13/2012	1.1	1.1	2.2
LAI-4	1367815	6948807	2/4/2013	0.095 U	0.24 U	ND
LAI-4	1413033	7168734	8/20/2013	0.70 J	1.2	1.9
LAI-4	1496925	7569334	8/18/2014	1.80	4.1	5.9
LAI-4	1537252	7766884	2/9/2015	2.0	4.0	6.0
LAI-4	1584434	8004610	8/12/2015	29.0 J	67.0 J	96 J
LAI-4	1629543	8234032	2/5/2016	0.25	0.57	0.82
LAI-4	1691407	8510422	8/3/2016	1.2	2.6	3.8
LAI-5		0609075-04	9/14/2006	0.238 U	0.477 U	ND
LAI-5		0609147-11	9/26/2006	0.238 U	0.475 U	ND
LAI-5		JZ78C	10/5/2006	0.57	0.82	1.39
LAI-5		KA53D	10/11/2006	0.25 U	0.50 U	ND
LAI-5		KB36I	10/17/2006	0.25 U	0.50 U	ND
LAI-5		KC41C	10/24/2006	0.25 U	0.50 U	ND
LAI-5		KH16D	11/30/2006	0.25 U	0.50 U	ND
LAI-5		KJ51H	12/20/2006	0.25 U	0.50 U	ND
LAI-5		KM86S	1/30/2007	0.25 U	0.50 U	ND

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Location	SDG	Lab ID	Date Collected	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx
LAI-5		KP77C	2/27/2007	0.25 U	0.50 U	ND
LAI-5		KR04B	3/12/2007	0.25 U	0.50 U	ND
LAI-5		KU08K	4/4/2007	0.25 U	0.50 U	ND
LAI-5		KZ12C	5/11/2007	0.25 U	0.50	0.50
LAI-5		LD26D	6/12/2007	0.25 U	0.50 U	ND
LAI-5		LH13E	7/11/2007	0.25 U	0.50 U	ND
LAI-5		LM13B	8/14/2007	0.25 U	0.50 U	ND
LAI-5		LO84E	9/7/2007	0.25 U	0.50 U	ND
LAI-5		LY03D	11/9/2007	0.25 U	0.50 U	ND
LAI-5		MI48G	2/6/2008	0.25 U	0.50 U	ND
LAI-5		MW70B	5/14/2008	0.25 U	0.50 U	ND
LAI-5		NK99C	8/15/2008	0.25 U	0.50 U	ND
LAI-5		NZ31C	11/7/2008	0.25 U	0.50 U	ND
LAI-5		OL46B	2/5/2009	0.25 U	0.50 U	ND
LAI-5		OY30B	5/7/2009	0.25 U	0.50 U	ND
LAI-5		PL91B	8/25/2009	0.25 U	0.50 U	ND
LAI-5		PW95D	11/9/2009	0.25 U	0.50 U	ND
LAI-5		QJ00F	2/8/2010	0.25 U	0.50 U	ND
LAI-5		QV48B	5/5/2010	0.25 U	0.50 U	ND
LAI-5		RI00G	8/10/2010	0.25 U	0.50 U	ND
LAI-5		RW94E	11/16/2010	0.25 U	0.50 U	ND
LAI-5		SH11E	2/1/2011	0.25 U	0.50 U	ND
LAI-5		SV29E	5/3/2011	0.25 U	0.50 U	ND
LAI-5		TI24D	8/10/2011	0.25 U	0.50 U	ND
LAI-5		TU94E	11/01/2011	0.25 U	0.50 U	ND
LAI-5		UH34E	2/6/2012	0.25 U	0.50 U	ND
LAI-5		UT72E	5/8/2012	0.25 U	0.50 U	ND
LAI-5		VF68E	8/13/2012	0.26	0.50 U	0.26
LAI-5	1413033	7168735	8/20/2013	0.18 J	0.30	0.48
LAI-5	1496925	7569335	8/18/2014	0.096 U	0.24 U	ND
LAI-5	1584434	8004612	8/12/2015	0.094 U	0.24 U	ND
LAI-5	1691407	8510423	8/4/2016	0.097 U	0.24 U	ND
LAI-6		0609075-05	9/14/2006	1.68	0.478 U	1.68
LAI-6		0609147-09	9/26/2006	0.237 UJ	0.474 UJ	ND
LAI-6		JZ78D	10/5/2006	0.25 U	0.50 U	ND
LAI-6		KA53E	10/11/2006	0.25 U	0.50 U	ND
LAI-6		KB36J	10/17/2006	0.25 U	0.50 U	ND
LAI-6		KC41D	10/24/2006	0.25 U	0.50 U	ND
LAI-6		KH16E	11/30/2006	0.25 U	0.50 U	ND
LAI-6		KJ51I	12/20/2006	0.25 U	0.50 U	ND
LAI-6		KM86T	1/30/2007	0.25 U	0.50 U	ND
LAI-6		KP77D	2/27/2007	0.25 U	0.50 U	ND
LAI-6		KR04A	3/12/2007	0.25 U	0.50 U	ND
LAI-6		KU08L	4/4/2007	0.25 U	0.50 U	ND
LAI-6		KZ12D	5/11/2007	0.25 U	0.50 U	ND
LAI-6		LD26E	6/12/2007	0.25 U	0.50 U	ND
LAI-6		LH13F	7/11/2007	0.25 U	1.5	1.5
LAI-6		LM13C	8/14/2007	0.25 U	0.50 U	ND
LAI-6		LO84D	9/7/2007	0.25 U	0.50 U	ND
LAI-6		LY03E	11/9/2007	0.25 U	0.50 U	ND
LAI-6		MI48F	2/6/2008	0.25 U	0.50 U	ND
LAI-6		MW70C	5/14/2008	0.25 U	0.64	0.64
LAI-6		NK99D	8/15/2008	0.25 U	0.50 U	ND
LAI-6		NZ31D	11/7/2008	0.25 U	0.50 U	ND
LAI-6		OL46C	2/5/2009	0.25 U	0.50 U	ND
LAI-6		OY30C	5/7/2009	0.25 U	0.50 U	ND
LAI-6		PL91C	8/25/2009	0.25 U	0.50 U	ND
LAI-6		PW95E	11/9/2009	0.25 U	0.50 U	ND
LAI-6		QJ00G	2/8/2010	0.25 U	0.50 U	ND
LAI-6		QV48C	5/5/2010	0.25 U	0.50 U	ND
LAI-6		RI00H	8/10/2010	0.25 U	0.50 U	ND
LAI-6		RW94F	11/16/2010	0.25 U	0.50 U	ND
LAI-6		SH11F	2/1/2011	0.25 U	0.50 U	ND
LAI-6		SV29F	5/3/2011	0.25 U	0.50 U	ND
LAI-6		TI24E	8/10/2011	0.25 U	0.50 U	ND
LAI-6		TU94F	11/01/2011	0.25 U	0.50 U	ND

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Location	SDG	Lab ID	Date Collected	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx
LAI-6		---	2/6/2012	No sample collected - well obstructed by construction fence		
LAI-6		UT72F	5/8/2012	0.25 U	0.50 U	ND
LAI-6		VF68F	8/13/2012	0.25 U	0.50 U	ND
LAI-6	1413033	7168736	8/20/2013	0.098 UJ	0.24 U	ND
LAI-6	1496925	7569336	8/18/2014	0.096 U	0.24 U	ND
LAI-6	1584434	8004613	8/12/2015	0.094 UJ	0.24 UJ	ND
LAI-6	1691407	8510424	8/4/2016	0.095 U	0.24 U	ND
LAI-7		0609081-12	9/18/2006	1.66	2.36	4.02
LAI-7		0609147-10	9/26/2006	1.29 J	0.474 UJ	1.29
LAI-7		JZ50D	10/4/2006	0.25 U	1.2	1.2
LAI-7		KA39B	10/10/2006	0.25 U	0.89	0.89
LAI-7		KB23B	10/16/2006	0.43	0.67	1.10
LAI-7		KC12C	10/23/2006	0.68	0.78	1.46
LAI-7		KF84B	11/16/2006	1.5	2.8	4.3
LAI-7		KG99J	11/29/2006	0.25 U	0.72	0.72
LAI-7		KH70B	12/5/2006	0.46	0.70	1.16
LAI-7		KJ31I	12/19/2006	0.25 U	0.77	0.77
LAI-7		KM86O	1/29/2007	0.25 U	0.50 U	ND
LAI-7		KP62E	2/26/2007	0.25 U	0.50 U	ND
LAI-7		KR44M	3/14/2007	0.25 U	0.50 U	ND
LAI-7		KU08G	4/4/2007	0.25 U	0.50 U	ND
LAI-7		KY63I	5/10/2007	0.25 U	0.50 U	ND
LAI-7		LD26F	6/12/2007	0.25 U	0.50 U	ND
LAI-7		LH13G	7/12/2007	0.25 U	0.50 U	ND
LAI-7		LL12J	8/13/2007	0.25 U	1.0	1.0
LAI-7		LO84L	9/7/2007	0.25 U	0.50 U	ND
LAI-7		LY03F	11/9/2007	0.25 U	1.2	1.2
LAI-7		MI48B	2/6/2008	0.25 U	1.0	1.0
LAI-7		MO93B	3/25/2008	0.25 U	0.50 U	ND
LAI-7		MT19B	4/21/2008	0.54	2.1	2.6
LAI-7		MW40B	5/13/2008	0.25 U	0.94	0.94
LAI-7		NC71B	6/24/2008	0.25 U	0.75	0.75
LAI-7		NF56B	7/14/2008	0.25 U	0.50 U	ND
LAI-7		NK72B	8/14/2008	0.25 U	0.50 U	ND
LAI-7		NP40B	9/16/2008	0.25 U	0.72	0.72
LAI-7		NW90B	10/28/2008	0.25 U	0.50 U	ND
LAI-7		NY67C	11/6/2008	0.25 U	0.93	0.93
LAI-7		OE69B	12/16/2009	0.25 U	0.50 U	ND
LAI-7		OK51B	1/29/2009	0.33	0.50 U	0.33
LAI-7		OL23G	2/4/2009	0.25 U	0.50 U	ND
LAI-7		OQ49C	3/12/2009	0.25 U	0.50 U	ND
LAI-7		OV50C	4/14/2009	0.25 U	0.50 U	ND
LAI-7		OY30D	5/7/2009	0.25 U	0.50 U	ND
LAI-7		PB23B	6/3/2009	0.25 U	0.88	0.88
LAI-7		PG73B	7/14/2009	0.25 U	0.50 U	ND
LAI-7		PL91D	8/25/2009	0.25 U	0.50 U	ND
LAI-7		PR87B	10/7/2009	0.25 U	0.50 U	ND
LAI-7		PW95F	11/9/2009	0.25 U	0.50 U	ND
LAI-7		QJ00E	2/8/2010	0.25 U	0.50 U	ND
LAI-7		QV48D	5/5/2010	0.25 U	0.50 U	ND
LAI-7		RI00B	8/10/2010	0.25 U	0.50 U	ND
LAI-7		RW94G	11/16/2010	0.25 U	0.50 U	ND
LAI-7		SH11G	2/1/2011	0.25 U	0.50 U	ND
LAI-7		SV29G	5/3/2011	0.25 UJ	0.50 UJ	ND
LAI-7		TH69B	8/8/2011	0.25 U	0.50 U	ND
LAI-7		TU94G	11/01/2011	0.25 U	0.50 U	ND
LAI-7		UH34F	2/6/2012	0.25 U	0.50 U	ND
LAI-7		UT72G	5/8/2012	0.25 U	0.50 U	ND
LAI-7		VF68G	8/13/2012	0.25 U	0.50 U	ND
LAI-7	1367815	6948808	2/4/2013	0.097 U	0.24 U	ND
LAI-7	1413730	7171764	8/22/2013	0.098 UJ	0.25 U	ND
LAI-7	1496925	7569337	8/18/2014	0.10 U	0.25 U	ND
LAI-7	1537252	7766885	2/9/2015	0.10	0.31	0.41
LAI-7	1584434	8004607	8/12/2015	0.094 U	0.24 U	ND
LAI-7	1629543	8234033	2/5/2016	0.096 U	0.24 U	ND
LAI-7	1691407	8510425	8/4/2016	0.095 U	0.24 U	ND

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TPH-D GROUNDWATER DATA THROUGH DECEMBER 2016
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Location	SDG	Lab ID	Date Collected	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx
LAI-8		0609085-01	9/18/2006	3.55	0.691	4.24
LAI-8		0609156-03	9/27/2006	5.95	7.69 U	5.95
LAI-8		KF84C	11/16/2006	1.3	1.6	2.9
LAI-8		KG99I	11/29/2006	6.6	1.0 U	6.6
LAI-8		KH70C	12/5/2006	1.1	0.77 U	1.1
LAI-8		KJ51C	12/19/2006	4.0	0.50 U	4.0
LAI-8		KM86M	1/30/2007	0.32	0.50 U	0.32
LAI-8		KU08E	4/4/2007	0.49	0.50 U	0.49
LAI-8		KZ12E	5/11/2007	0.66	0.50 U	0.66
LAI-8		LD26M	6/13/2007	6.2	0.53	6.7
LAI-8		LH13H	7/12/2007	0.25 U	1.3	1.3
LAI-8		LL12K	8/13/2007	4.2	0.6	1.3
LAI-8		LO84F	9/7/2007	0.42	0.50 U	0.42
LAI-8		LY03G	11/9/2007	1.2	0.50 U	1.2
LAI-8		MI48A	2/6/2008	0.86	0.57	1.43
LAI-8		MW40A	5/13/2008	2.3	0.87	3.17
LAI-8		NK72D	8/14/2008	1.6	4.2	5.8
LAI-8		OL23H	2/4/2009	0.25	0.50 U	0.25
LAI-8		OY30E	5/7/2009	1.3	0.50 U	1.3
LAI-8		PL91E	8/25/2009	3.1	2.60	5.7
LAI-8		PW95G	11/9/2009	4.7	1.5	6.2
LAI-8		QJ00D	2/8/2010	3.8	0.50 U	3.8
LAI-8		QV48E	5/5/2010	1.0	0.50 U	1.0
LAI-8		RI00I	8/10/2010	1.1	0.50 U	1.1
LAI-8		RW94H	11/16/2010	1.1	0.78	1.9
LAI-8		SH11H	2/1/2011	1.5	0.50 U	2.0
LAI-8		SV29H	5/3/2011	2.2 J	1.0 J	3.2
LAI-8		TI24F	8/10/2011	2.2	0.50 U	2.2
LAI-8	---	---	11/01/2011	Dry in November 2011		
LAI-8	---	---	2/6/2012	Dry in February 2012		
LAI-8	---	---	5/8/2012	Dry in May 2012		
LAI-8	---	---	8/13/2012	Dry in August 2012		
LAI-8	---	---	2/4/2013	Dry in February 2013		
LAI-8	---	---	8/22/2013	Dry in August 2013		
LAI-8	---	---	2/24/2014	Dry in February 2014		
LAI-8	---	---	8/18/2014	Dry in August 2014		
LAI-8	---	---	2/9/205	Dry in February 2015		
LAI-8	---	---	8/12/2015	Dry in August 2015		
LAI-8	---	---	2/5/2016	Dry in February 2016		
LAI-8	---	---	8/4/2016	Dry in August 2016		
TSA Wells						
BOP-62(ds)		JZ78J	10/5/2006	0.25 U	0.50 U	ND
BOP-62(ds)		KG99D	11/28/2006	0.25 U	0.50 U	ND
BOP-62(ds)		KJ31D	12/18/2006	0.25 U	0.50 U	ND
BOP-62(ds)		KM86L	1/30/2007	0.25 U	0.50 U	ND
BOP-62(ds)		KP62D	2/26/2007	0.25 U	0.50 U	ND
BOP-62(ds)		KR44G	3/14/2007	0.25 U	0.50 U	ND
BOP-62(ds)		KU08A	4/3/2007	0.25 U	0.50 U	ND
BOP-62(ds)		KZ14F	5/15/2007	0.25 U	0.50 U	ND
BOP-62(ds)		LD26J	6/12/2007	0.25 U	0.50 U	ND
BOP-62(ds)		LH50H	7/13/2007	0.25 U	0.50 U	ND
BOP-62(ds)		LM13I	8/17/2007	0.25 U	0.50 U	ND
BOP-62(ds)		LO84J	9/7/2007	0.25 U	0.50 U	ND
BOP-62(ds)		LY03K	11/13/2007	0.25 U	0.50 U	ND
BOP-62(ds)		MI48L	2/7/2008	0.25 U	0.50 U	ND
BOP-62(ds)		MW70E	5/14/2008	0.25 U	0.50 U	ND
BOP-62(ds)		NL00A	8/18/2008	0.25 U	0.50 U	ND
BOP-62(ds)		NY53D	11/4/2008	0.25 U	0.50 U	ND
BOP-62(ds)		OM09A	2/11/2009	0.25 U	0.50 U	ND
BOP-65(ds)		KM86I	1/30/2007	0.25 U	0.50 U	ND
BOP-65(ds)		KP77F	2/27/2007	0.25 U	0.50 U	ND
BOP-65(ds)		KR44E	03/13/2007	0.25 U	0.50 U	ND
BOP-65(ds)		KU08M	04/05/2007	0.25 U	0.50 U	ND
BOP-65(ds)		KZ14C	05/15/2007	0.25 U	0.50 U	ND
BOP-65(ds)		LD26L	06/13/2007	0.25 U	0.50 U	ND
BOP-65(ds)		LH50G	07/13/2007	0.25 U	0.50 U	ND

APPENDIX D-2
HISTORICAL COOLANT RELEASE
TPH-D GROUNDWATER DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	SDG	Lab ID	Date Collected	NWTPH-Dx (mg/L) (a) Diesel	Motor Oil	Total TPH-Dx	
BOP-65(ds)		MI48J	02/07/2008	0.25 U	0.50 U	ND	
BOP-65(ds)		OM09B	02/11/2009	0.25 U	0.50 U	ND	
EW-13		JZ78K	10/5/2006	0.25 U	0.50 U	ND	
EW-13		KH16F	11/30/2006	0.25 U	0.50 U	ND	
EW-13		KJ51F	12/19/2006	0.25 U	0.50 U	ND	
EW-13		KM86E	1/29/2007	0.25 U	0.50 U	ND	
EW-13		KP62L	2/26/2007	0.25 U	0.50 U	ND	
EW-13		KR44L	3/14/2007	0.25 U	0.50 U	ND	
EW-13		KU08P	4/5/2007	0.25 U	0.50 U	ND	
EW-13		KY63B	5/10/2007	0.25 U	0.50 U	ND	
EW-13		LD26R	6/13/2007	0.25 U	0.50 U	ND	
EW-13		LH50C	7/13/2007	0.25 U	0.50 U	ND	
EW-13		LL12F	8/13/2007	0.25 U	0.50 U	ND	
EW-13		LO84P	9/7/2007	0.25 U	0.50 U	ND	
EW-13		LX28A	11/7/2007	0.25 U	0.50 U	ND	
EW-13		MI48R	2/11/2008	0.25 U	0.50 U	ND	
EW-13		MW70J	5/14/2008	0.25 U	0.50 U	ND	
EW-13		NK49F	8/12/2008	0.25 U	0.50 U	ND	
EW-13		NY53A	11/4/2008	0.25 U	0.50 U	ND	
EW-13		OL23C	2/4/2009	0.25 U	0.50 U	ND	
EW-13			5/2/2011				
Sump							
Sump Drain		0609147-13	9/25/2006	19.3 J	1.95 J	21.3	
Sump Drain		JZ50A	10/4/2006	12	8.3	20.3	
Sump Drain		KA39	10/10/2006	4.9	7.1	12.0	
Sump Drain		KB23C	10/16/2006	56	66	122	
Sump Drain		KC12B	10/23/2006	NA	NA	NA	
Sump Drain		KC72E	10/26/2006	6.2	7.5	13.7	
Sump Drain		KD21A	10/30/2006	4.8	6.1	10.9	
Sump Drain		KD84A	11/2/2006	16	20	36	
Sump Drain		KE44A	11/7/2006	67	94	161	
Sump Drain		PPK0457-01	11/9/2006	19.1	19.5	38.6	
Sump Drain		KF31A	11/13/2006	3.6	5.3	8.9	
Sump Drain		KF84D	11/16/2006	32	47	79	
Sump Drain		KG26A	11/20/2006	2.4	3.5	5.9	
Sump Drain		KG99L	11/29/2006	2.8	4.2	7.0	
Sump Drain		---	12/14/2006	NA	NA	NA	
Sump Drain		KJ30A	12/19/2006	17	22	39	
Sump Drain		KJ69A	12/21/2006	4.5	7.2	11.7	
Sump Drain		KJ87A	12/26/2006	10	14	24	
Sump Drain		KK05A	12/28/2007	22	31	53	
Sump Drain		KM86F	01/29/2007	56	73	129	
Sump Drain		KP77G	02/27/2007	42	55	97	
Sump Drain		KR44A	03/13/2007	16	19	35	
Sump Drain		KU08S	04/05/2007	20	33	53	
Sump Drain		KZ12A	05/11/2007	12	17	29	
Sump Drain		LD26T	06/13/2007	11	16	27	
Sump Drain		LH13I	07/12/2007	4.6 J	6.1 J	11	J
Sump Drain		LM13H	08/16/2007	0.81	1.1	1.9	
Sump Drain		MO93C	3/25/2008	0.72	0.50 U	0.72	
Sump Drain		MT19A	4/21/2008	1.6	2.5 U	1.60	
Sump Drain		NC71C	6/24/2008	0.25 U	0.50 U	ND	
Sump Drain		NF56C	7/14/2008	0.25 U	0.50 U	ND	
Sump Drain		NP40C	9/16/2008	0.25 U	0.50 U	ND	
Sump Drain		NW90C	10/28/2008	0.93	1.2	2.1	
Sump Drain		OE69C	12/16/2009	0.74	0.77	1.51	
Sump Drain		OK51C	1/29/2009	0.67	0.57	1.24	
Sump Drain		OQ49A	3/12/2009	1.2	1.1	2.30	
Sump Drain		OV50A	4/14/2009	9.3	9.2	18.50	
Sump Drain		PB23A	6/3/2009	0.41	0.50 U	0.41	
Sump Drain		PG73A	7/14/2009	0.25 U	0.50 U	ND	
Sump Drain		PR87A	10/7/2009	0.25 U	0.50 U	ND	
					Cleanup Level (b)	1.35	

TPH-Dx = Diesel-range Total Petroleum Hydrocarbons

APPENDIX D-2
HISTORICAL COOLANT RELEASE
TPH-D GROUNDWATER DATA THROUGH DECEMBER 2016
BOEING OF PORTLAND

				NWTPH-Dx (mg/L) (a)		
Location	SDG	Lab ID	Date Collected	Diesel	Motor Oil	Total TPH-Dx

U = Indicates compound was analyzed for, but was not detected at the given reporting limit.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
ND = Not detected.
NA = Not analyzed.
Boxed value indicates concentration above the cleanup level.

(a) Samples analyzed after September 27, 2006 had silica gel and acid wash preparation steps conducted.
(b) Site-specific DEQ Risk-Based cleanup standard based on sum of diesel and motor oil components

Note: EHC-0 Injections: February 2008, October 2008, June 2010, June 2011, April 2012, April 2013

APPENDIX D-3
HISTORICAL AT-DEPTH VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	VOLATILES (Method TO-15)						
			Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
		Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
BOP72 (10-15)	1001038-15A	1/2/2010	43 U	250	2,900	460	28,000	NA	580
BOP72 (25-35)	1001038-17A	1/2/2010	91 U	510	340	850	52,000	NA	530
BOP72 (55-62)	1001038-19A	1/2/2010	6.9 U	11 U	15 U	16	2,100	NA	11 U
BOP73 (10-15)	1001038-01A	12/27/2009	56 U	200	740	180	30,000	NA	98
BOP73 (30-35)	1001038-03A	12/28/2009	210 U	330 U	460 U	660	110,000	NA	340 U
BOP73 (45-55)	1001038-05A	12/28/2009	110 U	410	360	420	88,000	NA	170 U
BOP73 (65-74)	1001038-07A	12/29/2009	10 U	16 U	22 U	16 U	3,100	NA	16 U
BOP74 (10-15)	1001038-09A	12/29/2009	33 U	52 U	71 U	52 U	15,000	NA	53 U
BOP74 (25-35)	1001038-11A	12/30/2009	100 U	200	220 U	160 U	81,000	NA	160 U
BOP74 (45-55)	1001038-13A	12/30/2009	5.8 U	9.1 U	12 U	9.1 U	2,400	NA	9.3 U
BOP-75 (10-15)	1101028-01A	12/27/2010	15 U	94	NA	1900	5,300	NA	46
BOP-75 (25-35)	1101028-03A	12/28/2010	40 U	370	NA	530	24,000	NA	68
BOP-75 (40-50)	1101028-05A	12/28/2010	37 U	350	NA	400	21,000	NA	72
BOP-76 (10-15)	1101028-07A	12/29/2010	3.3 U	78	NA	25	930	NA	70
BOP-76 (25-35)	1101028-09A	12/29/2010	29 U	99	NA	61	19,000	NA	140
BOP-76 (40-50)	1101028-11A	12/30/2010	120 U	280	NA	190 U	170,000	NA	200 U
BOP-76 (40-50) (b)	1101028B-12A	12/30/2010	150 U	450	NA	230 U	230,000	NA	240 U
BOP-77 (10-15)	1101028-13A	1/3/2011	24 U	40	NA	36 U	14,000	NA	37 U
BOP-77 (25-35)	1101028-15A	1/3/2011	41 U	97	NA	70	25,000	NA	65 U
BOP-77 (40-50)	1101028-17A	1/3/2011	3.1 U	90	NA	15	340	NA	10
BOP-78i	1210340-01A	10/11/2012	6.2	4.4 U	20	15	850	62	NA
BOP-78i	1211190-01A	11/6/2012	3.0 U	4.7 U	14	15	480	240	NA
BOP-78i	1302153-07A	2/6/2013	2.8 U	4.3 U	6.9	4.3 U	96	51	NA
BOP-78i	1305217-01A	5/8/2013	2.9 U	4.5 U	6.2 U	4.5 U	21	24	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
BOP-78i	1308248-01A	8/8/2013	2.8 U	4.3 U	5.9 U	4.3 U	45	56	NA
BOP-78i	1311232-01A	11/8/2013	3.1 U	4.8 U	6.6 U	4.8 U	64	25	NA
BOP-78i	1402186-04A	2/6/2014	3.2 U	4.9 U	6.7	4.9 U	6.6	8.4	NA
BOP-78i	1405264-04A	5/9/2014	3.2 U	4.9 U	6.7 U	4.9 U	88	37	NA
		7/2/2014 (c)	SVE System Shutdown						
BOP-78i	1408092-04A	8/5/2014	3.1 U	4.8 U	6.6 U	4.8 U	48	40	NA
BOP-78i	1411150-04A	11/4/2014	3.0 U	4.6 U	30	4.6 U	81	40	NA
		1/29/2015 (c)	SVE System Resumed Operation						
BOP-78i	1502274-01A	2/13/2015	3.0 U	4.7 U	15	4.7 U	380	82	NA
BOP-78i	1505125-04A	5/5/2015	3.1 U	4.8 U	6.7 U	4.8 U	59	30	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
BOP-78i	1508227-17A	8/7/2015	3.0 U	4.7 U	14	4.7 U	100	87	NA
		10/9/2015 (f)	SVE System Shutdown						
BOP-78i	1511156-01A	11/3/2015	3.2 U	5.0 U	26	5.0 U	63	82	NA
BOP-78(i)	1602135-01A	2/2/2016	44	11.0	40	110.0	620	200	NA
		4/7/2016 (f)	SVE System Resumed Operation						
BOP-78(i)	1605109-04A	5/3/2016	2.9 U	4.5 U	6.2 U	4.5 U	45	97	NA
BOP-78(i)	1608175-04A	8/5/2016	3.1 U	4.8 U	6.6 U	4.8 U	22	140	NA
BOP-78(i)	1611211-04A	11/9/2016	3 U	4.6 U	6.4 U	4.6 U	61	86	NA

APPENDIX D-3
HISTORICAL AT-DEPTH VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
		Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
BOP-79i	1210340-02A	10/11/2012	4.5	4.6 U	6.3 U	7.0	130	30	NA
BOP-79i	1211190-02A	11/6/2012	3.0 U	4.6 U	13	14	400	200	NA
BOP-79i	1302153-08A	2/6/2013	2.8 U	4.4 U	18	4.4 U	68	56	NA
BOP-79i	1305217-02A	5/8/2013	2.8 U	4.3 U	5.9 U	4.3 U	10	14	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
BOP-79i	1308248-02A	8/8/2013	3.0 U	4.7 U	6.5 U	4.7 U	32	58	NA
BOP-79i	1311232-02A	11/8/2013	3.1 U	4.8 U	6.6 U	4.8 U	32	24	NA
BOP-79i	1402186-05A	2/6/2014	3.1	4.8 U	6.6	4.8	6.5	8.2	NA
BOP-79i	1405264-05A	5/9/2014	3.0 U	4.7 U	6.5 U	4.7 U	48	26	NA
		7/2/2014 (c)	SVE System Shutdown						
BOP-79i	1408092-05A	8/5/2014	3.1 U	4.8 U	12	4.8 U	28	23	NA
BOP-79i	1411150-05A	11/4/2014	3.0 U	4.6 U	23	4.6 U	63	22	NA
		1/29/2015 (c)	SVE System Resumed Operation						
BOP-79i	1502274-02A	2/13/2015	15	4.5 U	22	29	250	42	NA
BOP-79i	1505125-04A	5/5/2015	2.9 U	4.6 U	6.3 U	4.6 U	11	22	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
BOP-79i	1508227-15A	8/7/2015	5.8 U	8.9 U	12 U	8.9 U	21	58	NA
		10/9/2015 (f)	SVE System Shutdown						
BOP-79i	1511156-02A	11/3/2015	3.3 U	5.1 U	21	5.1 U	57	53	NA
BOP-79(i)	1602135-02A	2/2/2016	73	46 U	64 U	46 U	170	110	NA
		4/7/2016 (f)	SVE System Resumed Operation						
BOP-79(i)	1605109-05A	5/3/2016	3.4 U	5.4 U	7.4 U	5.4 U	7.2 U	57	NA
BOP-79(i)	1608175-05A	8/5/2016	2.9 U	4.5 U	6.2 U	4.5 U	6.1 U	89	NA
BOP-79(i)	611211-05A	11/9/2016	3 U	4.6 U	6.3 U	4.6 U	6.2 U	52	NA
BOP-84i	1210340-03A	10/11/2012	3.1 U	7.7	31	11	350	59	NA
BOP-84i	1211190-03A	11/6/2012	3.2 U	4.9 U	13	14	440	240	NA
BOP-84i	1302153-09A	2/6/2013	3.1 U	4.8 U	6.6 U	4.8 U	230	65	NA
BOP-84i	1305217-03A	5/8/2013	3.0 U	4.7 U	6.5 U	4.7 U	100	70	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
BOP-84i	1308248-03A	8/8/2013	2.8 U	4.3 U	5.9 U	4.3 U	610	160	NA
BOP-84i	1311232-03A	11/8/2013	3.1 U	4.8 U	6.5 U	4.8 U	380	120	NA
BOP-84i	1402186-06A	2/6/2014	3.3 U	5.1 U	7.0	5.1 U	6.9	8.8	NA
BOP-84i	1405264-06A	5/9/2014	3.0 U	4.6 U	6.4 U	4.6 U	62	56	NA
		7/2/2014 (c)	SVE System Shutdown						
BOP-84i	1408092-06A	8/5/2014	3.0 U	4.6 U	6.4 U	4.6 U	140	86	NA
BOP-84i	1411150-06A	11/4/2014	12 U	19 U	26 U	19 U	5700	280	NA
		1/29/2015 (c)	SVE System Resumed Operation						
BOP-84i	1502274-03A	2/13/2015	3.1 U	4.8 U	12	4.8 U	1500	230	NA
BOP-84i	1505125-04A	5/5/2015	3.0 U	4.6 U	6.4 U	4.6 U	810	160	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
BOP-84i	1508227-09A	8/7/2015	3.0 U	4.6 U	12	4.6 U	380	120	NA
		10/9/2015 (f)	SVE System Shutdown						
BOP-84i	1511156-03A	11/3/2015	3.1 U	4.8 U	12	4.8 U	120	150	NA
BOP-84(i)	1602135-03A	2/2/2016	3.2	4.8 U	23	8.1	930	240	NA
		4/7/2016 (f)	SVE System Resumed Operation						
BOP-84(i)	1605109-06A	5/3/2016	3.4 U	5.3 U	7.2 U	5.3 U	90	38	NA
BOP-84(i)	1608175-06A	8/5/2016	2.7 U	4.3 U	5.9 U	4.3 U	28	54	NA

APPENDIX D-3
HISTORICAL AT-DEPTH VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
		Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
BOP-84(i)	1611211-06A	11/9/2016	3.1 U	4.8 U	6.5 U	4.8 U	32	32	NA
BOP-85i	1210340-04A	10/11/2012	3.0 U	4.6 U	6.4 U	6.0	360	150	NA
BOP-85i	1211190-04A	11/7/2012	3.2 U	4.9 U	6.7 U	4.9 U	150	98	NA
BOP-85i	1302153-10A	2/6/2013	3.2 U	4.9 U	8.0	29	85	87	NA
BOP-85i	1305217-04A	5/8/2013	3.1 U	4.8 U	6.5 U	4.8 U	15	46	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
BOP-85i	1308248-04A	8/8/2013	3.0 U	4.7 U	6.5 U	7.8	47	150	NA
BOP-85i	1311232-04A	11/8/2013	3.1 U	4.9 U	6.7 U	4.9 U	9.4	48	NA
BOP-85i	1402186-07A	2/6/2014	3.2 U	4.9	6.7	4.9	6.6	8.4	NA
BOP-85i	1405264-07A	5/9/2014	3.1 U	4.8 U	6.6 U	4.8 U	32	100	NA
		7/2/2014 (c)	SVE System Shutdown						
BOP-85i	1408092-07A	8/5/2014	3.0 U	4.7 U	180	4.7 U	58	140	NA
BOP-85i	1411150-07A	11/4/2014	3.0 U	4.6 U	41	4.6 U	20	44	NA
		1/29/2015 (c)	SVE System Resumed Operation						
BOP-85i	1502274-04A	2/13/2015	3.0 U	4.6 U	23	4.6 U	83	240	NA
BOP-85i	1505125-04A	5/5/2015	3.0 U	4.6 U	6.4 U	4.6 U	16	120	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
BOP-85i	1508227-21A	8/7/2015	3.1 U	4.8 U	6.6 U	4.8 U	24	180	NA
		10/9/2015 (f)	SVE System Shutdown						
BOP-85(i)	(d)	11/3/2015	NA	NA	NA	NA	NA	NA	NA
BOP-85(i)	1602135-04A	2/2/2016	3 U	4.6 U	34	4.6 U	14	330	NA
		4/7/2016 (f)	SVE System Resumed Operation						
BOP-85(i)	1605109-07A	5/3/2016	2.9 U	4.4 U	6.1 U	4.4 U	140	140	NA
BOP-85(i)	1608175-07A	8/5/2016	2.8 U	4.3 U	5.9 U	4.3 U	5.8 U	190	NA
BOP-85(i)	1611211-07A	11/9/2016	3.2	4.9	6.8	4.9	11	190	NA
BOP-86i	1210340-05A	10/11/2012	32	74	53	310	4,200	310	NA
BOP-86i	1211190-05A	11/7/2012	3.1 U	4.8 U	6.6 U	4.8 U	130	88	NA
BOP-86i	1302153-11A	2/6/2013	3.0 U	4.7 U	13	4.7 U	78	62	NA
BOP-86i	1305217-05A	5/8/2013	3.0 U	4.6 U	6.4 U	4.6 U	30	44	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
BOP-86i	1308248-05A	8/8/2013	2.8 U	4.4 U	6.0 U	4.4 U	110	83	NA
BOP-86i	1311232-05A	11/8/2013	3.0 U	4.7 U	6.9	4.7 U	63	96	NA
BOP-86i	1402186-08A	2/6/2014	3.0 U	4.7 U	6.5 U	4.7 U	6.4	8.1	NA
BOP-86i	1405264-08A	5/9/2014	3.0 U	4.7 U	7.2	4.7 U	270	89	NA
		7/2/2014 (c)	SVE System Shutdown						
BOP-86i	1408092-08A	8/5/2014	29 U	46 U	63 U	46 U	62 U	78 U	NA
BOP-86i	1411150-08A	11/4/2014	2.8 U	4.3 U	18	4.3 U	50	71	NA
		1/29/2015 (c)	SVE System Resumed Operation						
BOP-86i	1502274-05A	2/13/2015	3.2 U	5.0 U	6.9 U	5.0 U	73	84	NA
BOP-86i	1505125-04A	5/5/2015	7.7 U	12 U	16 U	12 U	26	300	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
BOP-86i	1508227-08A	8/7/2015	3.2 U	4.9 U	6.8 U	4.9 U	18	130	NA
		10/9/2015 (f)	SVE System Shutdown						
BOP-86i	1511156-05A	11/3/2015	2.6 U	4.1 U	15	4.1 U	57	220	NA
BOP-86(i)	1602135-05A	2/2/2016	2.9 U	4.5 U	17	4.5 U	39	300	NA
		4/7/2016 (f)	SVE System Resumed Operation						
BOP-86(i)	1605109-08A	5/3/2016	3.2 U	4.9 U	6.7 U	4.9 U	69	58	NA

APPENDIX D-3
HISTORICAL AT-DEPTH VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
		Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
BOP-86(i)	1608175-08A	8/5/2016	2.8 U	4.4 U	6 U	4.4 U	38	70	NA
BOP-86(i)	1611211-08A	11/9/2016	3.2 U	4.9 U	6.8 U	4.9 U	28	100	NA
BOP-87i	1210340-06A	10/11/2012	2.9 U	4.4 U	24	15	530	55	NA
BOP-87i	1211190-06A	11/7/2012	3.0 U	4.6 U	6.4 U	5.3	230	140	NA
BOP-87i	1302153-12A	2/6/2013	2.8 U	4.4 U	14	4.4 U	100	58	NA
BOP-87i	1305217-06A	5/8/2013	3.1 U	4.8 U	6.6 U	4.8 U	14	38	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
BOP-87i	1308248-06A	8/8/2013	3.2 U	4.9 U	11	4.9 U	54	140	NA
BOP-87i	1311232-06A	11/8/2013	3.0 U	4.6 U	8.0	4.6 U	54	53	NA
BOP-87i	1402186-09A	2/6/2014	2.7 U	4.2 U	5.8 U	4.2 U	5.7	7.2	NA
BOP-87i	1405264-09A	5/9/2014	3.0 U	4.7 U	6.5 U	4.7 U	30	71	NA
		7/2/2014 (c)	SVE System Shutdown						
BOP-87i	1408092-09A	8/5/2014	62	96	190	96	140	160	NA
BOP-87i	1411150-09A	11/4/2014	10 U	15 U	320	15 U	140	62	NA
		1/29/2015 (c)	SVE System Resumed Operation						
BOP-87i	1502274-06A	2/13/2015	3.0 U	4.6 U	79	4.6 U	360	120	NA
BOP-87i	1505125-04A	5/5/2015	3.0 U	4.7 U	12	4.7 U	98	65	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
BOP-87i	1508227-19A	8/7/2015	3.1 U	4.8 U	12	4.8 U	170	130	NA
		10/9/2015 (f)	SVE System Shutdown						
BOP-87i	1511156-06A	11/3/2015	3.2 U	5.0 U	68	5.0 U	53	98	NA
BOP-87(i)	1602135-06A	2/2/2016	3 U	5.0	600	7.9	150	230	NA
		4/7/2016 (f)	SVE System Resumed Operation						
BOP-87(i)	1605109-09A	5/3/2016	3.1 U	4.8 U	10	4.8 U	470	100	NA
BOP-87(i)	1608175-09A	8/5/2016	3.1 U	4.9 U	8	4.9 U	340	180	NA
BOP-87(i)	1611211-09A	11/9/2016	3 U	4.6 U	7.2	4.6 U	230	130	NA
BOP-88i	1210340-07A	10/11/2012	3.0 U	4.7 U	6.5 U	5.4	220	12	NA
BOP-88i	1211190-07A	11/7/2012	22 U	35 U	48 U	35 U	350	190	NA
BOP-88i	1302153-13A	2/6/2013	3.1 U	4.8 U	27	4.8 U	200	62	NA
BOP-88i	1305217-07A	5/8/2013	3.0 U	4.7 U	15	4.7 U	31	33	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
BOP-88i	1308248-07A	8/8/2013	3.1 U	4.8 U	16	4.8 U	120	100	NA
BOP-88i	1311232-07A	11/8/2013	3.0 U	4.7 U	16	4.7 U	68	37	NA
BOP-88i	1402186-10A	2/6/2014	3.1	4.8 U	6.6	4.8 U	6.5	8.2	NA
BOP-88i	1405264-10A	5/9/2014	2.9 U	4.4 U	12	4.4 U	31	42	NA
		7/2/2014 (c)	SVE System Shutdown						
BOP-88i	1408092-10A	8/5/2014	3.1 U	4.8 U	140	4.8 U	30	45	NA
BOP-88i	1411150-10A	11/4/2014	2.9 U	4.6 U	190	4.6 U	43	26	NA
		1/29/2015 (c)	SVE System Resumed Operation						
BOP-88i	1502274-07A	2/13/2015	8.1	4.8 U	66	7.9	760	93	NA
BOP-88i	1505125-04A	5/5/2015	3.0 U	4.7 U	25	4.7 U	150	46	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
BOP-88i	1508227-16A	8/7/2015	2.9 U	4.5 U	18	4.5 U	120	92	NA
		10/9/2015 (f)	SVE System Shutdown						
BOP-88i	1511156-07A	11/3/2015	3.9 U	6.0 U	160	6.6 J	120	89	NA
BOP-88(i)	1602135-07A	2/2/2016	2.9 U	6.3	300	4.5 U	80	140	NA
		4/7/2016 (f)	SVE System Resumed Operation						

APPENDIX D-3
HISTORICAL AT-DEPTH VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
		Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
BOP-88(i)	1605109-10A	5/3/2016	2.8 U	4.3 U	16	4.3 U	190	80	NA
BOP-88(i)	1608175-10A	8/5/2016	2.9 U	4.5 U	13	4.5 U	59	120	NA
BOP-88(i)	1611211-10A	11/9/2016	3.3 U	5.2 U	12	5.2 U	65	73	NA
VOW-16	1209159-03A	9/10/2012	4.8 U	7.4 U	190	7.4 U	2,500	480	NA
VOW-16	1211190-08A	11/6/2012	3.2 U	4.9 U	6.7 U	4.9 U	52	97	NA
VOW-16	1302153-04A	2/6/2013	2.9 U	4.4 U	20	4.4 U	120	50	NA
VOW-16	1305217-08A	5/8/2013	3.0 U	4.7 U	6.5 U	4.7 U	16	14	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
VOW-16	1308248-08A	8/8/2013	3.1 U	4.8 U	6.6 U	4.8 U	16	44	NA
VOW-16	1311232-08A	11/8/2013	3.0 U	4.6 U	6.4 U	4.6 U	9.6	22	NA
VOW-16	1402186-11A	2/6/2014	3.1 U	4.8	6.6	4.8 U	6.5	8.2	NA
VOW-16	1405264-11A	5/9/2014	3.0 U	4.6 U	6.4 U	4.6 U	26	33	NA
		7/2/2014 (c)	SVE System Shutdown						
VOW-16	1408092-11A	8/5/2014	3.0 U	4.7 U	37	4.7 U	340	41	NA
VOW-16	1411150-11A	11/4/2014	3.0 U	4.6 U	27	4.6 U	250	56	NA
		1/29/2015 (c)	SVE System Resumed Operation						
VOW-16	1502274-08A	2/13/2015	2.9 U	4.5 U	6.2 U	4.5 U	49	27	NA
VOW-16	1505125-11A	5/5/2015	3.0 U	4.6 U	6.4 U	4.6 U	6.2 J	20	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
VOW-16	1508227-22A	8/7/2015	3.1 U	4.8 U	19	4.8 U	23	86	NA
		10/9/2015 (f)	SVE System Shutdown						
VOW-16	1511156-08A	11/3/2015	2.7 U	4.1 U	14	4.1 U	34	28	NA
VOW-16	1602135-08A	2/2/2016	3 U	4.7 U	22	4.7 U	130	160	NA
		4/7/2016 (f)	SVE System Resumed Operation						
VOW-16	1605109-11A	5/3/2016	2.9 U	4.5 U	6.1 U	4.5 U	6 U	67	NA
VOW-16	1608175-11A	8/5/2016	2.9 U	4.5 U	6.2 U	4.5 U	6.6	120	NA
VOW-16	1611211-11A	11/9/2016	3.2 U	5 U	6.8 U	5 U	64	6.7 U	NA
VOW-17	1209159-05A	9/10/2012	13 U	20 U	87	20 U	8,300	1,800	NA
VOW-17	1211190-09A	11/6/2012	3.0 U	4.6 U	6.4 U	4.6 U	6.3 U	84	NA
VOW-17	1302153-05A	2/6/2013	120	8.0	25	56	200	62	NA
VOW-17	1305217-09A	5/8/2013	2.9 U	4.5 U	6.2 U	4.5 U	28	96	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
VOW-17	1308248-09A	8/8/2013	2.9 U	4.5 U	6.2 U	4.5 U	11	120	NA
VOW-17	1311232-09A	11/8/2013	2.9 U	4.4 U	6.1 U	4.4 U	15	96	NA
VOW-17	1402186-12A	2/6/2014	3.1 U	4.8 U	6.6	4.8 U	6.5	8.2	NA
VOW-17	1405264-12A	5/9/2014	3.1 U	4.8 U	6.6 U	4.8 U	12	59	NA
		7/2/2014 (c)	SVE System Shutdown						
VOW-17	1408092-12A	8/5/2014	3.0 U	4.6 U	11	4.6 U	300	100	NA
VOW-17	1411150-12A	11/4/2014	3.0 U	4.7 U	10	4.7 U	980	220	NA
		1/29/2015 (c)	SVE System Resumed Operation						
VOW-17	1502274-09A	2/13/2015	3.0 U	4.7 U	6.5 U	4.7 U	110	110	NA
VOW-17	1505125-12A	5/5/2015	3.2 U	5.0 U	6.9 U	5.0 U	24	120	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
VOW-17	1508227-10A	8/7/2015	3.1 U	4.8 U	16	4.8 U	35	120	NA
		10/9/2015 (f)	SVE System Shutdown						
VOW-17	1511156-09A	11/3/2015	3.1 U	4.8 U	8.2	4.8 U	13	55	NA
VOW-17	1602135-09A	2/2/2016	54	11	19	160	2600	210	NA

APPENDIX D-3
HISTORICAL AT-DEPTH VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Lab ID	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
		Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
		4/7/2016 (f)	SVE System Resumed Operation						
VOW-17	1605109-12A	5/3/2016	3.2 U	5 U	6.9 U	5 U	29	20	NA
VOW-17	1608175-12A	8/5/2016	2.8 U	4.3 U	6 U	4.3 U	7.8	50	NA
VOW-17	1611211-10A	11/9/2016	3.1 U	4.8 U	6.5 U	4.8 U	22	17	NA
VOW-18	1209159-01A	9/10/2012	62 U	450	7,900	740	31,000	8,800	NA
VOW-18	1211190-10A	11/6/2012	3.3 U	5.1 U	7.0 U	5.1 U	80	110	NA
VOW-18	1302153-06A	2/6/2013	3.2 U	5.0 U	6.9 U	5.0 U	43	61	NA
VOW-18	1305217-10A	5/8/2013	2.9 U	4.4 U	6.1 U	4.4 U	22	66	NA
		(b)	SVE System Shutdown/Restart 6/21 to7/22/13						
VOW-18	1308248-10A	8/8/2013	3.0 U	4.7 U	6.4 U	4.7 U	17	130	NA
VOW-18	1311232-10A	11/8/2013	3.0 U	4.7 U	6.5 U	4.7 U	9.9	81	NA
VOW-18	1402186-13A	2/6/2014	3.2 U	5.0 U	6.9 U	5.0 U	6.8 U	8.5	NA
VOW-18	1405264-13A	5/9/2014	3.0 U	4.6 U	6.4 U	4.6 U	18	140	NA
		7/2/2014 (c)	SVE System Shutdown						
VOW-18	1408092-13A	8/5/2014	3.0 U	4.6 U	77	9.5	360	200	NA
VOW-18	1411150-13A	11/4/2014	3.0 U	4.7 U	100	11	440	230	NA
		1/29/2015 (c)	SVE System Resumed Operation						
VOW-18	1502274-10A	2/13/2015	3.0 U	4.6 U	21	4.6 U	49	180	NA
VOW-18	1505125-13A	5/5/2015	3.0 U	4.6 U	6.4 U	4.6 U	14	230	NA
		(e)	SVE System Shutdown/Restart 6/8 to6/29/15						
VOW-18	1508227-06A	8/7/2015	3.0 U	4.6 U	6.3 U	4.6 U	14	160	NA
		10/9/2015 (f)	SVE System Shutdown						
VOW-18	1511156-10A	11/3/2015	3.2 U	5.0 U	42	10 J	300	300	NA
VOW-18	1602135-10A	2/2/2016	3 U	4.7 U	200	15	340	360	NA
		4/7/2016 (f)	SVE System Resumed Operation						
VOW-18	1605109-13A	5/3/2016	2.9 U	4.6 U	6.3 U	4.6 U	8.6	75	NA
VOW-18	1608175-13A	8/5/2016	3.1	4.8	6.6	4.8	10	120	NA
VOW-18	1611211-09A	11/9/2016	3 U	4.7 U	6.4 U	4.7 U	82	6.3 U	NA

NA = not analyzed
U = Indicates the compound was not detected at the reported concentration.
µg/m3 = micrograms per cubic meter
Box = Indicates exceedance of screening level

DCE = Dichloroethene
TCA = Trichloroethane
PCE = Tetrachloroethene

(a) Soil gas screening levels were developed by the Oregon Department of Environmental Quality (DEQ) by multiplying the Risk Based Concentration for air in an occupational setting by an attenuation factor of 1,000 to account for vapor intrusion through building slab. Screening levels updated June 7, 2012.
(b) SVE system was shutdown between 6/21 and 7/22, 2013 for bioremediation activities.
(c) SVE shut down on 7/2/2014 with ODEQ approval. Resumed operation on 1/29/2015
(d) Sample BOP-85i-1115 arrived at ambient vacuum, and its valve was slightly open. Analysis was cancelled.
(e) SVE system was shutdown between 6/8 and 6/29, 2015 for bioremediation activities.
(f) SVE system was shutdown on 10/9/2015 with ODEQ approval. Resumed operation on 4/7/2016

APPENDIX D-4
HISTORIC SUBSLAB VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
	Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
SG-1 (BOP-72)	12/17/2009	13 U	59	7,600	160	3,200	NA	440
SG-2 (BOP-73)	12/17/2009	2.7 U	4.2 U	160	4.2 U	420	NA	21
SG-3 (BOP-74)	12/17/2009	2.7 U	4.1 U	7.7	4.1 U	130	NA	4.2 U
SG-4	2/17/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-5	2/17/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-6	2/17/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-7	2/17/2010	100 U	103 U	134	103 U	212	NA	101 U
SG-8	2/17/2010	100 U	103 U	1,288	103 U	650	NA	101 U
SG-9	2/17/2010	100 U	1,534	21,826	157	1,639	NA	1,546
SG-10	2/17/2010	100 U	9238	104764	2613	14,133	NA	11,859
SG-11	2/17/2010	100 U	14273	190975	7414	20,743	NA	22,099
SG-12	2/17/2010	100 U	107	3,470	147	236	NA	109
SG-13	2/17/2010	100 U	650	9,058	599	1,489	NA	741
SG-14	2/17/2010	100 U	103 U	98 U	103 U	328	NA	101 U
SG-15	2/17/2010	100 U	103 U	1615	103 U	527	NA	101 U
SG-16	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-17	2/18/2010	100 U	103 U	295	103 U	102 U	NA	101 U
SG-18	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-19	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-20	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-21	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-22	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-23	2/18/2010	100 U	103 U	98 U	103 U	188	NA	101 U
SG-24	2/18/2010	100 U	103 U	186	103 U	8,007	NA	101 U
SG-25	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-26	2/18/2010	100 U	103 U	175	103 U	102 U	NA	101 U
SG-27	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-28	2/18/2010	100 U	103 U	98 U	103 U	102 U	NA	101 U
SG-28B	1/6/2011	30 U	3,200	NA	1,900	5,200	NA	4,900
SG-29	1/6/2011	2.7 U	150	NA	70	220	NA	180
SG-30	1/6/2011	3.0 U	22	NA	4.6 U	36	NA	38
SG-31	1/6/2011	3.0 U	4.6 U	NA	4.6 U	6.3 U	NA	4.8 U
SG-32	1/6/2011	29 U	3,000	NA	840	7,000	NA	3,300
SG-33	1/6/2011	3.9 U	46	NA	17	2500	NA	120
SG-34	1/6/2011	200 U	310 U	NA	1,100	280,000	NA	310 U
SG-35	1/6/2011	72 U	110 U	NA	380	120,000	NA	110 U
SG-36	1/6/2011	3.3 U	5.1 U	NA	760	240	NA	5.2 U
SG-37	1/6/2011	3.1 U	4.8 U	NA	25	1,800	NA	4.8 U
SG-38	1/6/2011	3.0 U	4.7 U	NA	4.7 U	2,000	NA	4.8 U
SG-39	1/6/2011	2.9 U	4.5 U	NA	4.5 U	48	NA	4.6 U
SG-40	05/23/2011	2.6 U	4.1 U	30	4.1 U	66	NA	4.1 U
SG-41	05/23/2011	3.0 U	4.6 U	12	4.6 U	28	NA	4.7 U
SG-42	05/23/2011	14 U	90	4,700	27	7,400	NA	240
SG-43	05/23/2011	12 U	18 U	53	18 U	4,800	NA	19 U
SG-44	05/23/2011	29 U	44 U	61 U	44 U	15,000	NA	45 U
SG-45	05/23/2011	290 U	440 U	610 U	660	170,000	NA	450 U
SG-46	05/23/2011	1,100 U	1,700 U	2,400 U	3,800	850,000	NA	1,800 U
SG-47	05/23/2011	2.9 U	4.5 U	7.6	4.5 U	870	NA	4.6 U
SG-48	05/24/2011	3.0 U	4.6 U	22	4.6 U	6.3 U	NA	4.7 U
SG-49	05/24/2011	2.9 U	4.5 U	140	4.5 U	120	NA	4.6 U

APPENDIX D-4
HISTORIC SUBSLAB VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
	Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
SG-50	05/24/2011	2.9 U	4.5 U	11	4.5 U	71	NA	4.6 U
SG-51	05/24/2011	3.0 U	4.6 U	6.4 U	4.6 U	6.3 U	NA	4.7 U
SG-52	05/24/2011	2.9 U	4.5 U	25	4.5 U	82	NA	4.6 U
SG-75 (BOP-75)	12/20/2010	3.1 U	6.7	NA	200	250	NA	6.8
SG-76 (BOP-76)	12/20/2010	3.0 U	360	NA	54	310	NA	330
SG-77 (BOP-77)	12/20/2010	3.1 U	4.8 U	NA	9.8	390	NA	4.8 U
VP-1	5/8/2013	3.0 U	4.7 U	6.5 U	4.7 U	49	64	NA
VP-1	8/8/2013	3.0 U	4.7 U	6.4 U	4.7 U	6.3 U	48	NA
VP-1	11/8/2013	2.8 U	4.3 U	5.9 U	4.3 U	5.8 U	66	NA
VP-1	2/6/2014	3.1 U	4.8 U	6.6 U	4.8 U	6.5 U	8.2	NA
VP-1	5/9/2014	3.0 U	4.7 U	6.5 U	4.7 U	6.4 U	57	NA
	7/2/2014 (b)	SVE System Shutdown						
VP-1	8/5/2014	2.9 U	4.4 U	6.9	4.4 U	250	89	NA
VP-1	11/4/2014	15 U	24 U	33 U	24 U	9000	270	NA
	1/29/2015 (b)	SVE System Resumed Operation						
VP-1	2/13/2015	3.0 U	4.7 U	6.5 U	4.7 U	330	80	NA
VP-1	5/5/2015	3.1 U	4.9 U	6.7 U	4.9 U	13	81	NA
VP-1	8/7/2015	2.5 UJ	3.9 UJ	5.4 UJ	3.9 U	8.4 J	42 J	NA
	10/9/2015 (c)	SVE System Shutdown						
VP-1	11/3/2015	3.1 U	4.8 U	6.6 U	4.8 U	70	61	NA
VP-1	2/2/2016	3 U	4.6 U	7.3	4.6 U	1600	99	NA
	4/7/2016 (c)	SVE System Resumed Operation						
VP-1	5/3/2016	2.7 U	4.2 U	5.8 U	4.2 U	14	18	NA
VP-1	8/5/2016	3.1 U	4.8 U	6.6 U	4.8 U	6.5 U	39	NA
VP-1	11/9/2016	1.2 U	2.2 U	2.4 U	1.8 U	2.4 U	18	NA
VP-2	5/8/2013	3.0 U	4.6 U	6.4 U	4.6 U	64	29	NA
VP-2	8/8/2013	3.0 U	4.7 U	6.4 U	4.7 U	110	74	NA
VP-2	11/8/2013	3.1 U	4.8 U	6.6 U	4.8 U	19	30	NA
VP-2	2/6/2014	3.2 U	4.9 U	6.7 U	4.9 U	6.6	8.4	NA
VP-2	5/9/2014	3.1 U	4.8 U	6.6 U	4.8 U	7.5	46	NA
	7/2/2014 (b)	SVE System Shutdown						
VP-2	8/5/2014	30 U	46 U	63 U	55	19000	200	NA
VP-2	11/4/2014	160 U	250 U	340 U	580	180000	2700	NA
	1/29/2015 (b)	SVE System Resumed Operation						
VP-2	2/13/2015	6.1 U	9.4 U	13 U	9.4 U	2900	92	NA
VP-2	5/5/2015	2.9 U	4.5 U	6.2 U	4.5 U	58	73	NA
VP-2	8/7/2015	3.0 U	4.7 U	6.5 U	4.7 U	36	67	NA
	10/9/2015 (c)	SVE System Shutdown						
VP-2	11/3/2015	32 U	49 U	67 U	52	21000	220	NA
VP-2	2/2/2016	420 U	650 U	890 U	650 U	150000	2300	NA
	4/7/2016 (c)	SVE System Resumed Operation						
VP-2	5/3/2016	3.3 U	5.1 U	7.1 U	5.1 U	220	25	NA
VP-2	8/5/2016	3 U	4.7 U	6.5 U	4.7 U	64	35	NA
VP-2	11/9/2016	1.1 U	2 U	2.3 U	1.6 U	20	17	NA
VP-3	5/8/2013	2.8 U	4.3 U	22	4.3 U	11	26	NA
VP-3	8/8/2013	3.0 U	4.6 U	27	4.6 U	19	110	NA
VP-3	11/8/2013	2.8 U	4.3 U	22	4.3 U	10	26	NA

APPENDIX D-4
HISTORIC SUBSLAB VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
	Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
VP-3	2/6/2014	3.0 U	4.7 U	6.5	4.7 U	6.4	8.1	NA
VP-3	5/9/2014	3.0 U	4.6 U	19	4.6 U	7.7	42	NA
	7/2/2014 (b)			SVE System Shutdown				
VP-3	8/5/2014	3.0 U	4.6 U	510	4.6 U	230	83	NA
VP-3	11/4/2014	3.0 U	4.6 U	890	4.6 U	240	84	NA
	1/29/2015 (b)			SVE System Resumed Operation				
VP-3	2/13/2015	3.0 U	4.6 U	100	4.6 U	39	65	NA
VP-3	5/5/2015	3.0 U	4.6 U	21	4.6 U	9.0	75	NA
VP-3	8/7/2015	3.0 U	4.6 U	26	4.6 U	10	56	NA
	10/9/2015 (c)			SVE System Shutdown				
VP-3	11/3/2015	3.3 U	5.1 U	220	5.1 U	81	58	NA
VP-3	2/2/2016	2.9 U	4.5 U	420	4.5 U	100	130	NA
	4/7/2016 (c)			SVE System Resumed Operation				
VP-3	5/3/2016	3.2 U	5 U	22	15	11	35	NA
VP-3	8/5/2016	3 U	4.6 U	18	4.6 U	7.5	49	NA
VP-3	11/9/2016	1 U	1.9 U	11	1.6 U	6.2	26	NA
VP-4	5/8/2013	2.9 U	4.6 U	6.3 U	4.6 U	52	70	NA
VP-4	8/8/2013	2.9 U	4.5 U	6.2 U	4.5 U	50	140	NA
VP-4	11/8/2013	3.0 U	4.7 U	6.5 U	4.7 U	25	90	NA
VP-4	2/6/2014	3.1 U	4.8 U	6.6 U	4.8 U	6.5	8.2	NA
VP-4	5/9/2014	2.9 U	4.4 U	6.1 U	4.4 U	12	70	NA
	7/2/2014 (b)			SVE System Shutdown				
VP-4	8/5/2014	3.0 U	4.7 U	8.9	4.7 U	130	180	NA
VP-4	11/4/2014	3.2 U	4.9 U	10	4.9 U	280	140	NA
	1/29/2015 (b)			SVE System Resumed Operation				
VP-4	2/13/2015	3.0 U	4.7 U	6.5 U	4.7 U	95	110	NA
VP-4	5/5/2015	3.1 U	4.9 U	6.7 U	4.9 U	34	100	NA
VP-4	8/7/2015	2.9 U	4.6 U	6.3 U	4.6 U	46	70	NA
	10/9/2015 (c)			SVE System Shutdown				
VP-4	11/3/2015	3.3 U	5.1 U	7.0 U	5.1 U	82	74	NA
VP-4	2/2/2016	3 U	4.6 U	16.0	4.6 U	150	100	NA
	4/7/2016 (c)			SVE System Resumed Operation				
VP-4	5/3/2016	2.6 U	4.1 U	5.6 U	4.1 U	43	37	NA
VP-4	8/5/2016	7.7 U	12 U	16.0 U	12 U	31	45	NA
VP-4	11/9/2016	1 U	1.9 U	2.2 U	1.6 U	19	18	NA
VP-5	5/8/2013	3.0 U	4.6 U	6.4 U	4.6 U	110	52	NA
VP-5	8/8/2013	3.1 U	4.8 U	6.6 U	4.8 U	69	120	NA
VP-5	11/8/2013	3.0 U	4.6 U	6.3 U	4.6 U	26	66	NA
VP-5	2/6/2014	3.1 U	4.8 U	6.6 U	4.8 U	6.5	8.2	NA
VP-5	5/9/2014	3.0 U	4.6 U	6.4 U	4.6 U	10	66	NA
	7/2/2014 (b)			SVE System Shutdown				
VP-5	8/5/2014	12 U	18 U	99	18 U	7400	150	NA
VP-5	11/4/2014	310 U	480 U	660 U	570	260000	4300	NA
	1/29/2015 (b)			SVE System Resumed Operation				
VP-5	2/13/2015	3.9 U	6.0 U	8.3 U	6.0 U	1300	69	NA
VP-5	5/5/2015	3.1 U	4.9 U	6.7 U	4.9 U	43	54	NA
VP-5	8/7/2015	2.8 U	4.4 U	6.1 U	4.4 U	19	32	NA
	10/9/2015 (c)			SVE System Shutdown				

APPENDIX D-4
HISTORIC SUBSLAB VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
	Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
VP-5	11/3/2015	5.1 U	7.8 U	50	7.8 U	2600	74	NA
VP-5	2/2/2016	250 U	390 U	2500	390 U	93000	1700	NA
	4/7/2016 (c)			SVE System Resumed Operation				
VP-5	5/3/2016	2.6 U	4.1 U	5.6 U	4.1 U	200	20	NA
VP-5	8/5/2016	3.3 U	5.1 U	7 U	5.1 U	31	30	NA
VP-5	11/9/2016	1.1 U	2.1 U	2.4 U	1.7 U	12	18	NA
VP-6	5/8/2013	3.0 U	4.6 U	20	4.6 U	22	53	NA
VP-6	8/8/2013	3.2 U	4.9 U	28	4.9 U	30	180	NA
VP-6	11/8/2013	3.2 U	4.9 U	13	4.9 U	10	150	NA
VP-6	2/6/2014	3.2 U	4.9 U	6.7	4.9 U	6.6 U	8.4	NA
VP-6	5/9/2014	3.1 U	4.8 U	9.8	4.8 U	8.0	100	NA
	7/2/2014 (b)			SVE System Shutdown				
VP-6	8/5/2014	3.0 U	6.0	470	10	290	210	NA
VP-6	11/4/2014	3.1 U	4.8 U	830	15	1200	170	NA
	1/29/2015 (b)			SVE System Resumed Operation				
VP-6	2/13/2015	2.9 U	4.6 U	99	4.6 U	160	110	NA
VP-6	5/5/2015	3.0 U	4.6 U	120	16	40	150	NA
VP-6	8/7/2015	2.9 U	4.5 U	31	4.6	19	94	NA
	10/9/2015 (c)			SVE System Shutdown				
VP-6	11/3/2015	3.2 U	4.9 U	180	6.2	100	120	NA
VP-6	2/2/2016	3 U	4.6 U	490	15	500	190	NA
	4/7/2016 (c)			SVE System Resumed Operation				
VP-6	5/3/2016	2.8 U	4.3 U	38	4.5	30	49	NA
VP-6	8/5/2016	2.8 U	4.4 U	29	4.4 U	10	68	NA
VP-6	11/9/2016	1.1 U	2.1 U	7.6	1.7 U	2.3 U	54	NA
VP-7	5/8/2013	2.9 U	56	1,600	59	130	56	NA
VP-7	8/8/2013	3.1 U	47	1,600	56	120	82	NA
VP-7	11/8/2013	3.1 U	43	1,100	40	92	42	NA
VP-7	2/6/2014	3.1 U	4.8	6.6	4.8	6.5	8.2	NA
VP-7	5/9/2014	3.0 U	41	1100	29	77	61	NA
	7/2/2014 (b)			SVE System Shutdown				
VP-7	8/5/2014	10 U	190	7200	160	500	170	NA
VP-7	11/4/2014	6.0 U	100	3600	95	260	100	NA
	1/29/2015 (b)			SVE System Resumed Operation				
VP-7	2/13/2015	3.0 U	69	2200	66	180	130	NA
VP-7	5/5/2015	3.0 U	31	930	39	90	77	NA
VP-7	8/7/2015	3.0 U	33	870	32	86	60	NA
	10/9/2015 (c)			SVE System Shutdown				
VP-7	11/3/2015	6.1 U	110	3500	120	310	88	NA
VP-7	2/2/2016	7.1 U	120	4600	120	400	150	NA
	4/7/2016 (c)			SVE System Resumed Operation				
VP-7	5/3/2016	3.3 U	30	1000	36	110	78	NA
VP-7	8/5/2016	2.8 U	25	820	20	78	92	NA
VP-7	11/9/2016	1.2 U	20	600	18	51	64	NA
VP-8	5/8/2013	13 U	380	7,600	120	300	100	NA
VP-8	8/8/2013	5.7 U	190	4,500	83	180	150	NA
VP-8	11/8/2013	7.3 U	200	3,800	43	150	110	NA

APPENDIX D-4
HISTORIC SUBSLAB VAPOR WELL ANALYTICAL RESULTS
FORMER VAPOR DEGREASER SOURCE AREA
BOEING PORTLAND

Location	Date Collected	VOLATILES (Method TO-15) Vinyl Chloride (µg/m3)	1,1-DCE (µg/m3)	1,1,1-TCA (µg/m3)	cis-1,2-DCE (µg/m3)	TCE (µg/m3)	PCE (µg/m3)	1,1-DCA (µg/m3)
	Screening Level (a)	2,800	880,000	22,000,000		2,900	47,000	7,700
VP-8	2/6/2014	5.2 U	8.0	11	8.0	11	14	NA
VP-8	5/9/2014	3.0 U	99	2500	17	98	110	NA
	7/2/2014 (b)			SVE System Shutdown				
VP-8	8/5/2014	40 U	780	30000	310	2200	340	NA
VP-8	11/4/2014	40 U	1000	26000	450	1600	290	NA
	1/29/2015 (b)			SVE System Resumed Operation				
VP-8	2/13/2015	6.3 U	230	4800	110	260	140	NA
VP-8	5/5/2015	3.0 U	100	2400	39	110	140	NA
VP-8	8/7/2015	6.0 U	140	2800	41	140	91	NA
	10/9/2015 (c)			SVE System Shutdown				
VP-8	11/3/2015	21 U	530	14000	230	630	150	NA
VP-8	2/2/2016	20 U	460	14000	260	790	180	NA
	4/7/2016 (c)			SVE System Resumed Operation				
VP-8	5/3/2016	3.1 U	100	2200	36	100	75	NA
VP-8	8/5/2016	7.6 U	110	2800	30	130	100	NA
VP-8	11/15/2016	2.6 U	20	530	43	47	36	NA
VP-9	5/8/2013	3.1 U	4.8 U	17	4.8 U	340	390	NA
VP-9	8/8/2013	3.0 U	4.6 U	39	4.6 U	570	360	NA
VP-9	11/8/2013	3.0 U	4.6 U	9.5	4.6 U	160	170	NA
VP-9	2/6/2014	3.2 U	4.9 U	6.7 U	4.9 U	6.6	8.4	NA
VP-9	5/9/2014	3.0 U	4.6 U	6.5	4.6 U	72	100	NA
	7/2/2014 (b)			SVE System Shutdown				
VP-9	8/5/2014	2.9 U	4.5 U	58	4.5 U	440	210	NA
VP-9	11/4/2014	2.9 U	4.6 U	41	4.6 U	250	120	NA
	1/29/2015 (b)			SVE System Resumed Operation				
VP-9	2/13/2015	2.9 U	4.5 U	38	4.5 U	300	160	NA
VP-9	5/5/2015	3.1 U	4.8 U	18	4.8 U	220	140	NA
VP-9	8/7/2015	3.0 U	4.6 U	10	4.6 U	97	90	NA
	10/9/2015 (c)			SVE System Shutdown				
VP-9	11/3/2015	3.0 U	4.6 U	28	4.6 U	220	120	NA
VP-9	2/2/2016	3.1 U	4.8 U	52	4.8 U	270	130	NA
	4/7/2016 (c)			SVE System Resumed Operation				
VP-9	5/3/2016	2.9 U	4.5 U	14	4.5 U	130	74	NA
VP-9	8/5/2016	3.0 U	4.6 U	8.6	4.6 U	76	58	NA
VP-9	11/9/2016	1.1 U	2.1 U	2.4 U	1.7 U	36	28	NA

U = Indicates the compound was not detected at the reported concentration.
µg/m3 = micrograms per cubic meter
DCE = Dichloroethene
TCA = Trichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
NA = Not analyzed.
Box indicates exceedance of screening level.

(a) Soil gas screening levels were developed by the Oregon Department of Environmental Quality (DEQ) by multiplying the Risk Based Concentration for air in an occupational setting by an attenuation factor of 1,000 to account for vapor intrusion through building slab. Screening levels updated June 7, 2012.
(b) SVE shut down on 7/2/2014 with ODEQ approval. Resumed operation on 1/29/2015
(c) SVE system was shutdown on 10/9/2015 with ODEQ approval. Resumed operation on 4/7/2016

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
West Corrective Action Area Wells		
BOP-1(i)	5/27/1986	33.75
BOP-1(i)	5/26/1987	33.64
BOP-1(i)	8/24/1988	32.32
BOP-1(i)	11/4/1988	31.36
BOP-1(i)	2/9/1989	32.46
BOP-1(i)	5/17/1989	25.99
BOP-1(i)	8/24/1989	21.72
BOP-1(i)	11/16/1989	20.04
BOP-1(i)	2/28/1990	15.08
BOP-1(i)	5/10/1990	11.55
BOP-1(i)	8/24/1990	8.88
BOP-1(i)	11/29/1990	7.48
BOP-1(i)	2/28/1991	10.70
BOP-1(i)	5/23/1991	6.27
BOP-1(i)	8/22/1991	3.66
BOP-1(i)	11/21/1991	1.90
BOP-1(i)	2/27/1992	5.31
BOP-1(i)	5/28/1992	2.51
BOP-1(i)	8/27/1992	1.59
BOP-1(i)	11/25/1992	1.10
BOP-1(i)	2/24/1993	1.96
BOP-1(i)	5/27/1993	3.18
BOP-1(i)	8/26/1993	2.42
BOP-1(i)	11/23/1993	1.14
BOP-1(i)	2/24/1994	1.72
BOP-1(i)	5/26/1994	2.41
BOP-1(i)	8/24/1994	1.42
BOP-1(i)	11/29/1994	9.51
BOP-1(i)	2/3/1995	9.55
BOP-1(i)	5/25/1995	6.76
BOP-1(i)	8/31/1995	2.36
BOP-1(i)	11/28/1995	2.08
BOP-1(i)	2/29/1996	9.12
BOP-1(i)	5/29/1996	6.23
BOP-1(i)	8/29/1996	6.16
BOP-1(i)	11/1/1996	3.56
BOP-1(i)	11/20/1996	4.77
BOP-1(i)	2/26/1997	7.52
BOP-1(i)	5/28/1997	6.39
BOP-1(i)	8/1/1997	8.28
BOP-1(i)	8/29/1997	4.65
BOP-1(i)	11/21/1997	1.45
BOP-1(i)	2/23/1998	3.31
BOP-1(i)	8/5/1998	1.21
BOP-1(i)	2/4/1999	-5.10
BOP-1(i)	5/12/1999	-8.26
BOP-1(i)	8/3/1999	-6.73
BOP-1(i)	11/2/1999	-8.11
BOP-1(i)	2/5/2000	-7.53
BOP-1(i)	5/3/2000	-2.85
BOP-1(i)	8/7/2000	1.12
BOP-1(i)	11/8/2000	0.00

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-1(i)	2/3/2001	-3.40
BOP-1(i)	5/4/2001	-3.14
BOP-1(i)	8/4/2001	-3.05
BOP-1(i)	2/8/2002	-1.27
BOP-1(i)	5/1/2002	6.90
BOP-1(i)	8/2/2002	-2.30
BOP-1(i)	2/5/2003	3.38
BOP-1(i)	2/6/2004	-4.54
BOP-1(i)	2/1/2005	-4.81
BOP-1(i)	8/1/2005	-3.81
BOP-1(i)	2/2/2006	5.48
BOP-1(i)	8/2/2006	7.99
BOP-1(i)	2/1/2007	8.27
BOP-1(i)	5/2/2007	7.15
BOP-1(i)	8/1/2007	2.65
BOP-1(i)	11/6/2007	-4.07
BOP-1(i)	2/22/2008	8.63
BOP-1(i)	8/6/2008	7.57
BOP-1(i)	2/2/2009	25.73
BOP-1(i)	8/5/2009	27.71
BOP-1(i)	2/2/2010	28.98
Decommissioned 3/16/2010		
BOP-2(i)	5/27/1986	30.97
BOP-2(i)	5/26/1987	30.80
BOP-2(i)	8/24/1988	29.72
BOP-2(i)	11/4/1988	29.03
BOP-2(i)	2/9/1989	29.91
BOP-2(i)	5/17/1989	21.22
BOP-2(i)	8/24/1989	17.64
BOP-2(i)	11/16/1989	16.26
BOP-2(i)	2/28/1990	8.40
BOP-2(i)	5/10/1990	6.07
BOP-2(i)	8/24/1990	4.33
BOP-2(i)	11/29/1990	4.15
BOP-2(i)	2/28/1991	5.12
BOP-2(i)	5/23/1991	1.96
BOP-2(i)	8/22/1991	0.52
BOP-2(i)	11/21/1991	-0.67
BOP-2(i)	2/27/1992	1.16
BOP-2(i)	5/28/1992	-0.19
BOP-2(i)	8/27/1992	-1.00
BOP-2(i)	11/25/1992	-1.37
BOP-2(i)	2/24/1993	-0.95
BOP-2(i)	5/27/1993	0.60
BOP-2(i)	8/26/1993	-0.69
BOP-2(i)	11/23/1993	-1.78
BOP-2(i)	2/24/1994	-1.11
BOP-2(i)	5/26/1994	-0.73
BOP-2(i)	8/24/1994	-1.56
BOP-2(i)	11/28/1994	4.53
BOP-2(i)	2/2/1995	4.16
BOP-2(i)	5/25/1995	2.45
BOP-2(i)	8/31/1995	-1.18

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
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Location	Sample Date	Groundwater Elevation (ft)
BOP-2(i)	11/28/1995	-1.53
BOP-2(i)	2/29/1996	3.53
BOP-2(i)	5/29/1996	1.22
BOP-2(i)	8/29/1996	2.23
BOP-2(i)	11/20/1996	0.83
BOP-2(i)	2/26/1997	2.50
BOP-2(i)	5/28/1997	4.18
BOP-2(i)	8/29/1997	0.78
BOP-2(i)	11/21/1997	-1.78
BOP-2(i)	2/23/1998	-0.29
BOP-2(i)	8/5/1998	-1.70
BOP-2(i)	2/4/1999	0.28
BOP-2(i)	5/12/1999	-6.78
BOP-2(i)	8/3/1999	-4.43
BOP-2(i)	11/2/1999	-5.15
BOP-2(i)	2/5/2000	-5.04
BOP-2(i)	5/3/2000	0.78
BOP-2(i)	8/7/2000	3.10
BOP-2(i)	11/8/2000	3.05
BOP-2(i)	2/3/2001	-0.14
BOP-2(i)	5/4/2001	0.63
BOP-2(i)	8/4/2001	0.64
BOP-2(i)	2/8/2002	1.79
BOP-2(i)	5/1/2002	8.68
BOP-2(i)	8/2/2002	1.28
BOP-2(i)	2/5/2003	11.45
BOP-2(i)	2/6/2004	-0.19
BOP-2(i)	2/1/2005	-0.96
BOP-2(i)	8/1/2005	0.48
BOP-2(i)	2/2/2006	7.16
BOP-2(i)	8/2/2006	18.67
BOP-2(i)	2/1/2007	10.80
BOP-2(i)	5/2/2007	8.94
BOP-2(i)	8/1/2007	8.44
BOP-2(i)	11/6/2007	0.13
BOP-2(i)	2/22/2008	10.40
BOP-2(i)	8/6/2008	7.90
BOP-2(i)	2/2/2009	25.02
BOP-2(i)	8/5/2009	23.69
Decommissioned 3/19/2010		
BOP-4(i)	5/27/1986	34.41
BOP-4(i)	5/26/1987	34.34
BOP-4(i)	2/9/1988	32.02
BOP-4(i)	8/24/1988	32.92
BOP-4(i)	11/4/1988	31.92
BOP-4(i)	2/9/1989	33.07
BOP-4(i)	5/17/1989	26.97
BOP-4(i)	8/24/1989	22.21
BOP-4(i)	11/16/1989	20.55
BOP-4(i)	2/28/1990	15.65
BOP-4(i)	5/10/1990	11.95
BOP-4(i)	8/24/1990	9.12
BOP-4(i)	11/29/1990	7.75

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-4(i)	2/28/1991	9.88
BOP-4(i)	5/23/1991	6.54
BOP-4(i)	8/22/1991	3.59
BOP-4(i)	11/21/1991	1.68
BOP-4(i)	2/27/1992	5.74
BOP-4(i)	5/28/1992	2.26
BOP-4(i)	8/27/1992	1.28
BOP-4(i)	11/25/1992	0.68
BOP-4(i)	2/24/1993	1.70
BOP-4(i)	5/27/1993	2.84
BOP-4(i)	8/26/1993	1.91
BOP-4(i)	11/23/1993	0.55
BOP-4(i)	2/24/1994	1.27
BOP-4(i)	5/26/1994	1.97
BOP-4(i)	8/24/1994	0.82
BOP-4(i)	11/29/1994	9.72
BOP-4(i)	2/3/1995	9.93
BOP-4(i)	5/25/1995	6.78
BOP-4(i)	8/31/1995	1.82
BOP-4(i)	11/28/1995	1.99
BOP-4(i)	2/29/1996	9.64
BOP-4(i)	5/29/1996	6.51
BOP-4(i)	8/29/1996	6.17
BOP-4(i)	11/1/1996	3.32
BOP-4(i)	11/20/1996	5.16
BOP-4(i)	2/26/1997	7.74
BOP-4(i)	5/28/1997	6.57
BOP-4(i)	8/1/1997	8.53
BOP-4(i)	8/29/1997	4.53
BOP-4(i)	11/21/1997	0.97
BOP-4(i)	2/23/1998	3.20
BOP-4(i)	8/5/1998	1.28
BOP-4(i)	2/4/1999	-2.12
BOP-4(i)	5/12/1999	-6.06
BOP-4(i)	8/3/1999	-4.01
BOP-4(i)	11/2/1999	-5.07
BOP-4(i)	2/5/2000	-4.38
BOP-4(i)	5/3/2000	0.49
BOP-4(i)	8/7/2000	2.91
BOP-4(i)	11/8/2000	2.63
BOP-4(i)	2/3/2001	-0.32
BOP-4(i)	5/4/2001	0.24
BOP-4(i)	8/4/2001	0.05
BOP-4(i)	2/8/2002	1.76
BOP-4(i)	5/1/2002	8.16
BOP-4(i)	8/2/2002	0.65
BOP-4(i)	2/5/2003	5.87
BOP-4(i)	2/6/2004	-0.34
BOP-4(i)	2/1/2005	-1.41
BOP-4(i)	8/1/2005	-0.33
BOP-4(i)	2/2/2006	8.60
BOP-4(i)	8/2/2006	10.69
BOP-4(i)	2/1/2007	19.07
BOP-4(i)	5/2/2007	9.83

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-4(i)	8/1/2007	9.84
BOP-4(i)	11/6/2007	-0.70
BOP-4(i)	2/22/2008	11.14
BOP-4(i)	8/6/2008	8.77
BOP-4(i)	2/2/2009	26.54
BOP-4(i)	8/5/2009	27.93
Decommissioned 3/10/2010		
BOP-16(i)	5/26/1987	30.74
BOP-16(i)	2/9/1988	28.89
BOP-16(i)	8/24/1988	29.71
BOP-16(i)	2/9/1989	29.81
BOP-16(i)	5/17/1989	21.79
BOP-16(i)	8/24/1989	17.73
BOP-16(i)	11/16/1989	16.35
BOP-16(i)	5/10/1990	6.18
BOP-16(i)	8/24/1990	4.45
BOP-16(i)	11/29/1990	4.37
BOP-16(i)	2/28/1991	5.17
BOP-16(i)	5/23/1991	2.04
BOP-16(i)	8/22/1991	0.65
BOP-16(i)	11/21/1991	-0.68
BOP-16(i)	2/27/1992	1.23
BOP-16(i)	5/28/1992	-0.17
BOP-16(i)	8/27/1992	-0.96
BOP-16(i)	11/25/1992	-1.34
BOP-16(i)	2/24/1993	-0.90
BOP-16(i)	5/27/1993	-0.11
BOP-16(i)	8/26/1993	-0.61
BOP-16(i)	11/23/1993	-1.79
BOP-16(i)	2/24/1994	-1.08
BOP-16(i)	5/26/1994	-0.82
BOP-16(i)	8/24/1994	-1.53
BOP-16(i)	11/28/1994	4.56
BOP-16(i)	2/2/1995	4.15
BOP-16(i)	5/25/1995	2.43
BOP-16(i)	8/30/1995	-1.23
BOP-16(i)	11/28/1995	-1.53
BOP-16(i)	2/29/1996	3.46
BOP-16(i)	5/29/1996	1.17
BOP-16(i)	8/29/1996	2.25
BOP-16(i)	11/20/1996	1.05
BOP-16(i)	2/26/1997	2.44
BOP-16(i)	5/28/1997	3.93
BOP-16(i)	8/29/1997	0.84
BOP-16(i)	11/21/1997	-1.82
BOP-16(i)	2/23/1998	-0.32
BOP-16(i)	8/5/1998	1.54
BOP-16(i)	2/4/1999	-3.64
BOP-16(i)	5/12/1999	-6.69
BOP-16(i)	8/3/1999	-4.32
BOP-16(i)	11/2/1999	-5.00
BOP-16(i)	2/5/2000	-4.85
BOP-16(i)	5/3/2000	0.88

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
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Location	Sample Date	Groundwater Elevation (ft)
BOP-16(i)	8/7/2000	3.26
BOP-16(i)	11/8/2000	3.25
BOP-16(i)	2/3/2001	0.12
BOP-16(i)	5/4/2001	0.93
BOP-16(i)	8/4/2001	0.85
BOP-16(i)	2/8/2002	2.04
BOP-16(i)	5/1/2002	8.72
BOP-16(i)	8/2/2002	1.58
BOP-16(i)	2/5/2003	4.99
BOP-16(i)	2/6/2004	0.08
BOP-16(i)	2/1/2005	-0.43
BOP-16(i)	8/1/2005	0.67
BOP-16(i)	2/2/2006	7.08
BOP-16(i)	8/2/2006	9.83
BOP-16(i)	2/1/2007	10.96
BOP-16(i)	5/2/2007	8.98
BOP-16(i)	8/1/2007	8.78
BOP-16(i)	11/6/2007	0.44
BOP-16(i)	2/22/2008	10.43
BOP-16(i)	8/6/2008	9.13
BOP-16(i)	2/2/2009	24.23
BOP-16(i)	8/5/2009	23.55
BOP-16(i)	2/2/2010	25.04
BOP-16(i)	5/5/2010	26.83
BOP-16(i)	8/5/2010	25.82
BOP-16(i)	2/4/2011	28.85
BOP-16(i)	8/1/2011	30.78
BOP-16(i)	2/1/2012	29.40
BOP-16(i)	8/1/2012	31.26
BOP-16(i)	2/1/2013	32.76
BOP-16(i)	8/1/2013	28.78
BOP-16(i)	2/4/2014	31.18
BOP-16(i)	8/4/2014	29.02
BOP-16(i)	2/2/2015	29.25
BOP-16(i)	8/3/2015	30.18
BOP-16(i)	2/1/2016	32.17
BOP-16(i)	8/2/2016	32.01
BOP-57(ia)	8/24/1994	9.46
BOP-57(ia)	11/28/1994	14.74
BOP-57(ia)	2/2/1995	13.75
BOP-57(ia)	5/24/1995	13.41
BOP-57(ia)	8/30/1995	10.67
BOP-57(ia)	11/28/1995	12.83
BOP-57(ia)	2/27/1996	13.62
BOP-57(ia)	5/29/1996	13.19
BOP-57(ia)	8/28/1996	13.27
BOP-57(ia)	11/1/1996	11.83
BOP-57(ia)	11/20/1996	11.89
BOP-57(ia)	2/26/1997	14.35
BOP-57(ia)	5/28/1997	13.81
BOP-57(ia)	2/4/1999	2.44
BOP-57(ia)	5/12/1999	6.12
BOP-57(ia)	8/21/2001	9.36

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
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Location	Sample Date	Groundwater Elevation (ft)
BOP-57(ia)	8/20/2002	11.84
BOP-57(ia)	2/25/2003	12.50
BOP-57(ia)	2/27/2004	9.53
BOP-57(ia)	8/20/2004	8.30
BOP-57(ia)	8/9/2005	9.29
BOP-57(ia)	2/2/2006	13.45
BOP-57(ia)	8/1/2007	14.20
BOP-57(ia)	2/22/2008	14.68
BOP-57(ia)	8/6/2008	15.51
BOP-57(ia)	2/2/2009	28.70
BOP-57(ia)	8/5/2009	31.35
BOP-57(ia)	2/2/2010	32.10
BOP-57(ia)	8/5/2010	33.89
BOP-57(ia)	2/4/2011	36.74
BOP-57(ia)	8/1/2011	38.53
BOP-57(ia)	2/1/2012	37.91
BOP-57(ia)	8/1/2012	38.07
BOP-57(ia)	2/1/2013	38.77
BOP-57(ia)	8/1/2013	35.83
BOP-57(ia)	2/4/2014	33.57
BOP-57(ia)	8/4/2014	33.61
BOP-57(ia)	2/2/2015	35.11
BOP-57(ia)	8/3/2015	35.05
BOP-57(ia)	2/1/2016	37.08
BOP-57(ia)	8/2/2016	36.98
BOP-57(ib)	8/24/1994	6.93
BOP-57(ib)	11/28/1994	10.95
BOP-57(ib)	2/2/1995	11.35
BOP-57(ib)	5/24/1995	10.31
BOP-57(ib)	8/30/1995	7.40
BOP-57(ib)	11/28/1995	6.84
BOP-57(ib)	2/28/1996	10.99
BOP-57(ib)	5/30/1996	10.54
BOP-57(ib)	8/29/1996	10.89
BOP-57(ib)	11/1/1996	9.70
BOP-57(ib)	11/20/1996	9.98
BOP-57(ib)	2/26/1997	11.19
BOP-57(ib)	5/28/1997	11.27
BOP-57(ib)	8/1/1997	12.10
BOP-57(ib)	2/4/1999	3.68
BOP-57(ib)	5/12/1999	7.17
BOP-57(ib)	8/21/2001	9.83
BOP-57(ib)	8/20/2002	12.95
BOP-57(ib)	2/25/2003	12.63
BOP-57(ib)	2/27/2004	10.05
BOP-57(ib)	8/18/2004	8.38
BOP-57(ib)	8/10/2005	9.47
BOP-57(ib)	2/2/2006	14.57
BOP-57(ib)	8/1/2007	14.75
BOP-57(ib)	2/22/2008	14.76
BOP-57(ib)	8/6/2008	14.52
BOP-57(ib)	2/2/2009	28.39
BOP-57(ib)	8/5/2009	29.94

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Location	Sample Date	Groundwater Elevation (ft)
BOP-57(ib)	2/2/2010	30.81
BOP-57(ib)	8/5/2010	32.15
BOP-57(ib)	2/4/2011	34.92
BOP-57(ib)	8/1/2011	37.02
BOP-57(ib)	2/1/2012	36.46
BOP-57(ib)	8/1/2012	36.64
BOP-57(ib)	2/1/2013	37.69
BOP-57(ib)	8/1/2013	34.75
BOP-57(ib)	2/4/2014	32.52
BOP-57(ib)	8/4/2014	33.25
BOP-57(ib)	2/2/2015	33.90
BOP-57(ib)	8/3/2015	34.28
BOP-57(ib)	2/1/2016	36.01
BOP-57(ib)	8/2/2016	36.06
E-5	2/2/2000	9.38
E-5	8/7/2000	9.64
E-5	8/4/2001	7.90
E-5	2/13/2002	8.05
E-5	5/1/2002	17.17
E-5	8/2/2002	8.30
E-5	11/8/2002	6.09
E-5	2/5/2003	20.48
E-5	5/7/2003	6.08
E-5	2/6/2004	19.50
E-5	5/10/2004	16.65
E-5	8/2/2004	15.61
E-5	11/13/2004	14.79
E-5	5/2/2005	17.96
E-5	8/1/2005	16.71
E-5	11/1/2005	17.48
E-5	2/1/2006	21.98
E-5	5/8/2006	6.25
E-5	5/30/2006	19.71
E-5	8/2/2006	18.51
E-5	11/9/2006	19.01
E-5	2/1/2007	17.90
E-5	5/3/2007	19.57
E-5	8/1/2007	18.51
E-5	11/6/2007	16.82
E-5	2/22/2008	19.90
E-5	5/2/2008	22.26
E-5	8/6/2008	19.53
E-5	11/17/2008	22.90
E-5	2/18/2009	27.33
E-5	5/4/2009	31.16
E-5	8/3/2009	29.67
E-5	11/2/2009	29.27
E-5	2/2/2010	30.87
E-5	5/4/2010	31.42
E-5	8/2/2010	31.82
E-5	11/8/2010	31.72
E-5	2/4/2011	34.26
E-5	5/2/2011	36.98

APPENDIX D-5
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BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-5	8/1/2011	36.48
E-5	2/1/2012	36.66
E-5	5/2/2012	37.20
E-5	8/1/2012	36.21
E-5	11/1/2012	36.28
E-5	2/1/2013	37.60
E-5	5/1/2013	35.79
E-5	8/1/2013	34.76
E-5	11/6/2013	32.75
E-5	2/4/2014	31.82
E-5	5/2/2014	32.63
E-5	8/4/2014	32.95
E-5	11/3/2014	32.56
E-5	2/2/2015	33.98
E-5	5/1/2015	34.18
E-5	8/3/2015	33.86
E-5	11/2/2015	32.51
E-5	2/1/2016	35.46
E-5	5/3/2016	36.36
E-5	8/2/2016	35.34
E-5	11/3/2016	34.18
E-10	2/4/1999	-1.41
E-10	5/12/1999	-29.30
E-10	2/2/2000	-17.66
E-10	8/7/2000	-9.97
E-10	8/4/2001	-19.91
E-10	2/13/2002	-29.03
E-10	5/1/2002	7.08
E-10	8/2/2002	-26.13
E-10	11/8/2002	-30.42
E-10	2/5/2003	-16.82
E-10	5/7/2003	-20.80
E-10	2/6/2004	-32.70
E-10	5/10/2004	-35.20
E-10	8/2/2004	-36.41
E-10	11/13/2004	-32.62
E-10	5/2/2005	-32.58
E-10	8/1/2005	-32.41
E-10	11/1/2005	-26.47
E-10	2/1/2006	-19.02
E-10	5/8/2006	-4.85
E-10	5/30/2006	-1.62
E-10	8/2/2006	1.38
E-10	11/9/2006	-15.77
E-10	2/1/2007	9.50
E-10	5/3/2007	-5.11
E-10	8/1/2007	-3.88
E-10	11/6/2007	-39.40
E-10	2/22/2008	-5.72
E-10	5/2/2008	15.18
E-10	8/6/2008	-1.96
E-10	11/17/2008	15.26
E-10	2/18/2009	20.23

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-10	5/4/2009	22.67
E-10	8/3/2009	21.26
E-10	11/2/2009	19.43
E-10	2/2/2010	19.56
Decommissioned 3/29/2010		
E-11	2/2/2000	1.36
E-11	8/7/2000	6.73
E-11	8/4/2001	3.93
E-11	2/13/2002	6.13
E-11	5/1/2002	11.03
E-11	8/2/2002	6.67
E-11	11/8/2002	-2.95
E-11	2/5/2003	-1.99
E-11	5/7/2003	-0.99
E-11	2/6/2004	-9.20
E-11	5/10/2004	-10.71
E-11	8/2/2004	-11.27
E-11	11/13/2004	-13.85
E-11	5/2/2005	-12.86
E-11	8/1/2005	-13.76
E-11	11/1/2005	8.09
E-11	2/1/2006	-2.57
E-11	5/8/2006	-3.47
E-11	5/30/2006	-4.29
E-11	8/2/2006	-4.38
E-11	11/9/2006	-6.87
E-11	2/1/2007	-6.41
E-11	5/3/2007	-2.13
E-11	8/1/2007	-4.10
E-11	11/6/2007	-9.69
E-11	2/22/2008	-3.24
E-11	5/2/2008	2.51
E-11	8/6/2008	-1.24
E-11	11/17/2008	10.68
E-11	2/18/2009	26.65
E-11	5/4/2009	24.21
E-11	8/3/2009	25.60
E-11	11/2/2009	25.84
E-11	2/2/2010	26.11
E-11	5/4/2010	24.87
E-11	8/2/2010	25.19
E-11	11/8/2010	25.21
E-11	2/4/2011	25.36
E-11	5/2/2011	25.44
E-11	8/1/2011	25.44
E-11	8/1/2013	58.41
E-11	2/4/2014	28.61
E-11	5/2/2014	30.45
E-11	8/4/2014	54.61
E-11	11/3/2014	66.34
E-11	2/2/2015	58.91
E-11	5/1/2015	60.11
E-11	8/3/2015	59.21

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-11	11/2/2015	65.36
E-11	2/1/2016	77.26
E-11	5/3/2016	70.63
E-11	8/2/2016	57.21
E-11	11/3/2016	NM
E-14	2/2/2000	-17.44
E-14	8/7/2000	-3.12
E-14	8/4/2001	-8.44
E-14	2/13/2002	-8.71
E-14	5/1/2002	4.52
E-14	8/2/2002	-7.82
E-14	11/8/2002	-10.50
E-14	2/5/2003	-1.80
E-14	5/7/2003	-1.10
E-14	2/6/2004	-12.58
E-14	5/10/2004	-23.15
E-14	8/2/2004	-2.47
E-14	11/13/2004	-14.58
E-14	5/2/2005	-10.64
E-14	8/1/2005	-10.43
E-14	11/1/2005	-9.14
E-14	2/1/2006	0.80
E-14	5/8/2006	2.00
E-14	5/30/2006	2.80
E-14	8/2/2006	2.26
E-14	11/9/2006	-3.73
E-14	2/1/2007	1.81
E-14	5/3/2007	0.89
E-14	8/1/2007	-17.34
E-14	11/6/2007	-10.78
E-14	2/22/2008	3.15
E-14	5/2/2008	15.80
E-14	8/6/2008	2.89
E-14	2/18/2009	-14.64
E-14	5/4/2009	-10.19
E-14	8/3/2009	-18.50
E-14	11/2/2009	-20.26
E-14	2/2/2010	-19.98
Decommissioned 4/1/2010		
E-15	2/2/2000	-2.12
E-15	8/7/2000	1.39
E-15	8/4/2001	1.37
E-15	2/13/2002	1.62
E-15	5/1/2002	6.92
E-15	8/2/2002	-3.83
E-15	11/8/2002	0.18
E-15	2/5/2003	2.45
E-15	5/7/2003	3.45
E-15	2/6/2004	0.05
E-15	5/10/2004	-6.98
E-15	8/2/2004	-5.04
E-15	11/13/2004	-6.06

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-15	5/2/2005	-0.89
E-15	8/1/2005	-4.30
E-15	11/1/2005	2.40
E-15	2/1/2006	5.10
E-15	5/8/2006	6.25
E-15	5/30/2006	6.80
E-15	8/2/2006	6.61
E-15	11/9/2006	3.07
E-15	2/1/2007	7.78
E-15	5/3/2007	5.73
E-15	8/1/2007	4.09
E-15	11/6/2007	-3.97
E-15	2/22/2008	2.77
E-15	5/2/2008	10.58
E-15	8/6/2008	1.05
E-15	11/17/2008	8.69
E-15	2/18/2009	28.82
E-15	5/4/2009	27.00
E-15	8/3/2009	29.92
E-15	11/2/2009	29.10
E-15	2/2/2010	30.72
E-15	5/4/2010	31.98
E-15	8/2/2010	32.80
E-15	11/8/2010	32.66
E-15	2/4/2011	53.19
E-15	5/2/2011	39.47
E-15	8/1/2011	55.08
E-15	2/1/2012	38.07
E-15	5/2/2012	39.31
E-15	8/1/2012	38.62
E-15	11/1/2012	36.35
E-15	2/1/2013	38.79
E-15	5/1/2013	28.81
E-15	8/1/2013	17.82
E-15	11/6/2013	13.79
E-15	2/4/2014	14.60
E-15	5/2/2014	5.39
E-15	8/4/2014	14.25
E-15	11/3/2014	25.17
E-15	2/2/2015	27.59
E-15	5/1/2015	3.20
E-15	8/3/2015	0.40
E-15	11/2/2015	-0.40
E-15	2/1/2016	13.20
E-15	5/3/2016	20.57
E-15	8/2/2016	30.69
E-15	11/3/2016	26.97
E-16	2/2/2000	-12.52
E-16	8/7/2000	9.57
E-16	8/4/2001	6.88
E-16	2/13/2002	9.90
E-16	5/1/2002	11.87
E-16	8/2/2002	9.59

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-16	11/8/2002	6.67
E-16	2/5/2003	9.65
E-16	5/7/2003	11.43
E-16	2/6/2004	7.14
E-16	5/10/2004	7.35
E-16	8/2/2004	6.94
E-16	11/13/2004	4.61
E-16	5/2/2005	6.87
E-16	8/1/2005	6.91
E-16	11/1/2005	7.46
E-16	2/1/2006	13.12
E-16	5/8/2006	12.33
E-16	5/30/2006	12.30
E-16	8/2/2006	11.90
E-16	11/9/2006	9.26
E-16	2/1/2007	11.59
E-16	5/3/2007	12.49
E-16	8/1/2007	12.17
E-16	11/6/2007	6.98
E-16	2/22/2008	13.07
E-16	5/2/2008	17.30
E-16	8/6/2008	13.56
E-16	11/17/2008	21.04
E-16	2/18/2009	27.82
E-16	5/4/2009	28.38
E-16	8/3/2009	29.02
E-16	11/2/2009	28.82
E-16	2/2/2010	29.66
E-16	5/4/2010	30.96
E-16	8/2/2010	31.01
E-16	11/8/2010	31.05
E-16	2/4/2011	31.30
E-16	5/2/2011	38.22
E-16	8/1/2011	36.85
E-16	2/1/2012	36.13
E-16	5/2/2012	37.22
E-16	8/1/2012	36.31
E-16	11/1/2012	35.02
E-16	2/1/2013	40.05
E-16	5/1/2013	33.83
E-16	8/1/2013	33.73
E-16	11/6/2013	31.25
E-16	2/4/2014	30.76
E-16	5/2/2014	21.89
E-16	8/4/2014	30.32
E-16	11/3/2014	30.19
E-16	2/2/2015	32.82
E-16	5/1/2015	33.53
E-16	8/3/2015	33.01
E-16	11/2/2015	32.53
E-16	2/1/2016	35.64
E-16	5/3/2016	32.49
E-16	8/2/2016	34.15
E-16	11/3/2016	32.63

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
Central Corrective Action Area Wells		
BOP-10(i)	5/26/1987	78.82
BOP-10(i)	2/9/1988	77.59
BOP-10(i)	8/24/1988	77.86
BOP-10(i)	11/4/1988	68.82
BOP-10(i)	2/9/1989	69.81
BOP-10(i)	5/17/1989	64.12
BOP-10(i)	8/24/1989	61.67
BOP-10(i)	11/16/1989	62.58
BOP-10(i)	2/28/1990	62.15
BOP-10(i)	5/10/1990	62.24
BOP-10(i)	8/24/1990	61.70
BOP-10(i)	11/29/1990	61.67
BOP-10(i)	2/28/1991	63.50
BOP-10(i)	5/23/1991	61.31
BOP-10(i)	8/22/1991	64.13
BOP-10(i)	11/21/1991	62.06
BOP-10(i)	2/27/1992	62.75
BOP-10(i)	5/28/1992	64.32
BOP-10(i)	8/27/1992	63.90
BOP-10(i)	11/25/1992	62.96
BOP-10(i)	2/24/1993	64.31
BOP-10(i)	5/27/1993	65.93
BOP-10(i)	8/26/1993	65.46
BOP-10(i)	11/23/1993	64.48
BOP-10(i)	2/24/1994	65.39
BOP-10(i)	5/26/1994	66.27
BOP-10(i)	8/24/1994	68.89
BOP-10(i)	11/29/1994	72.93
BOP-10(i)	2/2/1995	71.39
BOP-10(i)	5/24/1995	70.93
BOP-10(i)	8/30/1995	69.03
BOP-10(i)	11/28/1995	69.17
BOP-10(i)	2/27/1996	73.38
BOP-10(i)	5/29/1996	72.55
BOP-10(i)	8/28/1996	72.89
BOP-10(i)	11/20/1996	71.37
BOP-10(i)	2/26/1997	74.00
BOP-10(i)	5/28/1997	73.65
BOP-10(i)	8/1/1997	73.35
BOP-10(i)	8/29/1997	72.96
BOP-10(i)	11/21/1997	71.81
BOP-10(i)	2/23/1998	72.60
BOP-10(i)	8/5/1998	70.48
BOP-10(i)	2/4/1999	67.85
BOP-10(i)	5/12/1999	67.44
BOP-10(i)	8/3/1999	67.82
BOP-10(i)	11/2/1999	67.27
BOP-10(i)	2/5/2000	66.74
BOP-10(i)	5/3/2000	65.87
BOP-10(i)	8/7/2000	66.14
BOP-10(i)	11/8/2000	64.24
BOP-10(i)	2/3/2001	64.80

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-10(i)	5/4/2001	65.67
BOP-10(i)	8/4/2001	65.00
BOP-10(i)	2/8/2002	64.93
BOP-10(i)	5/1/2002	65.51
BOP-10(i)	8/2/2002	65.09
BOP-10(i)	2/5/2003	68.87
BOP-10(i)	2/6/2004	69.00
BOP-10(i)	2/1/2005	69.57
BOP-10(i)	8/1/2005	71.64
BOP-10(i)	2/2/2006	72.56
BOP-10(i)	8/2/2006	71.96
BOP-10(i)	2/1/2007	73.07
BOP-10(i)	5/2/2007	73.86
BOP-10(i)	8/1/2007	73.38
BOP-10(i)	11/6/2007	73.37
BOP-10(i)	2/22/2008	73.63
BOP-10(i)	8/6/2008	73.54
BOP-10(i)	2/2/2009	73.04
BOP-10(i)	8/5/2009	74.24
BOP-10(i)	2/2/2010	75.46
BOP-10(i)	8/5/2010	75.28
BOP-10(i)	2/4/2011	75.66
BOP-10(i)	8/1/2011	75.08
BOP-10(i)	2/1/2012	70.79
BOP-10(i)	8/1/2012	70.55
BOP-10(i)	2/1/2013	70.74
BOP-10(i)	8/1/2013	69.58
BOP-10(i)	2/4/2014	69.37
BOP-10(i)	8/4/2014	71.29
BOP-10(i)	2/2/2015	71.37
BOP-10(i)	8/3/2015	71.49
BOP-10(i)	2/1/2016	71.36
BOP-10(i)	8/2/2016	70.39
BOP-56(i)	8/24/1994	34.21
BOP-56(i)	11/29/1994	35.53
BOP-56(i)	2/2/1995	35.69
BOP-56(i)	5/24/1995	35.72
BOP-56(i)	8/30/1995	35.30
BOP-56(i)	11/28/1995	35.11
BOP-56(i)	2/27/1996	35.79
BOP-56(i)	5/29/1996	36.06
BOP-56(i)	8/28/1996	35.95
BOP-56(i)	11/20/1996	35.91
BOP-56(i)	2/26/1997	36.50
BOP-56(i)	5/28/1997	36.68
BOP-56(i)	8/29/1997	36.43
BOP-56(i)	11/21/1997	35.93
BOP-56(i)	2/23/1998	36.34
BOP-56(i)	8/5/1998	35.94
BOP-56(i)	2/4/1999	35.21
BOP-56(i)	5/12/1999	35.80
BOP-56(i)	8/3/1999	35.85
BOP-56(i)	11/2/1999	35.72

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-56(i)	2/5/2000	36.16
BOP-56(i)	5/3/2000	36.16
BOP-56(i)	8/7/2000	36.03
BOP-56(i)	11/8/2000	35.56
BOP-56(i)	2/3/2001	35.41
BOP-56(i)	5/4/2001	35.39
BOP-56(i)	8/4/2001	35.28
BOP-56(i)	2/8/2002	33.78
BOP-56(i)	5/1/2002	36.05
BOP-56(i)	8/2/2002	35.90
BOP-56(i)	2/5/2003	36.22
BOP-56(i)	2/6/2004	36.66
BOP-56(i)	2/1/2005	35.94
BOP-56(i)	8/1/2005	37.22
BOP-56(i)	2/2/2006	37.15
BOP-56(i)	8/2/2006	37.48
BOP-56(i)	2/1/2007	36.73
BOP-56(i)	5/2/2007	37.56
BOP-56(i)	8/1/2007	37.22
BOP-56(i)	11/6/2007	36.57
BOP-56(i)	2/22/2008	37.46
BOP-56(i)	8/6/2008	36.97
BOP-56(i)	2/3/2009	40.06
BOP-56(i)	8/5/2009	39.66
BOP-56(i)	2/2/2010	40.12
BOP-56(i)	8/5/2010	39.52
BOP-56(i)	2/4/2011	41.29
BOP-56(i)	8/1/2011	40.34
BOP-56(i)	2/1/2012	42.42
BOP-56(i)	8/1/2012	42.52
BOP-56(i)	2/1/2013	42.90
BOP-56(i)	8/1/2013	41.53
BOP-56(i)	2/4/2014	39.24
BOP-56(i)	8/4/2014	40.24
BOP-56(i)	2/2/2015	40.40
BOP-56(i)	8/3/2015	41.14
BOP-56(i)	2/1/2016	41.65
BOP-56(i)	8/2/2016	42.19
BOP-59(i)	8/24/1994	77.40
BOP-59(i)	11/29/1994	82.50
BOP-59(i)	2/3/1995	81.39
BOP-59(i)	5/25/1995	80.66
BOP-59(i)	8/31/1995	78.56
BOP-59(i)	11/28/1995	78.99
BOP-59(i)	2/28/1996	83.68
BOP-59(i)	5/30/1996	82.45
BOP-59(i)	8/29/1996	83.00
BOP-59(i)	11/1/1996	80.77
BOP-59(i)	11/20/1996	80.74
BOP-59(i)	2/26/1997	84.08
BOP-59(i)	5/28/1997	83.84
BOP-59(i)	8/1/1997	83.26
BOP-59(i)	8/29/1997	82.89

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-59(i)	11/21/1997	81.32
BOP-59(i)	2/23/1998	81.85
BOP-59(i)	8/5/1998	79.96
BOP-59(i)	2/4/1999	76.83
BOP-59(i)	5/12/1999	76.42
BOP-59(i)	8/3/1999	76.60
BOP-59(i)	11/2/1999	75.89
BOP-59(i)	2/5/2000	73.37
BOP-59(i)	5/3/2000	69.86
BOP-59(i)	8/7/2000	67.56
BOP-59(i)	11/8/2000	65.66
BOP-59(i)	2/3/2001	67.86
BOP-59(i)	5/4/2001	69.33
BOP-59(i)	8/4/2001	67.37
BOP-59(i)	2/8/2002	67.33
BOP-59(i)	5/1/2002	71.98
BOP-59(i)	8/2/2002	66.02
BOP-59(i)	2/5/2003	70.45
BOP-59(i)	2/6/2004	70.11
BOP-59(i)	2/1/2005	74.12
BOP-59(i)	8/1/2005	77.54
BOP-59(i)	2/2/2006	78.76
BOP-59(i)	8/2/2006	77.61
BOP-59(i)	2/1/2007	79.84
BOP-59(i)	5/2/2007	81.26
BOP-59(i)	8/1/2007	82.69
BOP-59(i)	11/6/2007	82.70
BOP-59(i)	2/22/2008	79.63
BOP-59(i)	8/6/2008	80.62
BOP-59(i)	2/2/2009	81.31
BOP-59(i)	8/5/2009	81.69
BOP-59(i)	2/2/2010	82.99
BOP-59(i)	8/5/2010	82.97
BOP-59(i)	2/4/2011	83.04
BOP-59(i)	8/1/2011	82.07
BOP-59(i)	2/1/2012	72.03
BOP-59(i)	8/1/2012	69.81
BOP-59(i)	2/1/2013	69.19
BOP-59(i)	8/1/2013	68.85
BOP-59(i)	2/4/2014	69.86
BOP-59(i)	8/4/2014	71.04
BOP-59(i)	2/2/2015	71.18
BOP-59(i)	8/3/2015	70.91
BOP-59(i)	2/1/2016	70.99
BOP-59(i)	8/2/2016	70.53
E-6	2/2/2000	40.06
E-6	8/7/2000	41.36
E-6	8/4/2001	38.59
E-6	2/13/2002	36.75
E-6	5/1/2002	40.51
E-6	8/2/2002	37.02
E-6	11/8/2002	37.53
E-6	2/5/2003	43.67

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-6	5/7/2003	37.26
E-6	2/6/2004	44.34
E-6	5/10/2004	44.43
E-6	8/2/2004	44.11
E-6	11/13/2004	43.52
E-6	5/2/2005	44.77
E-6	8/1/2005	45.23
E-6	11/1/2005	44.87
E-6	2/1/2006	45.52
E-6	5/8/2006	45.57
E-6	5/30/2006	45.57
E-6	8/2/2006	45.43
E-6	11/9/2006	44.68
E-6	2/1/2007	45.47
E-6	5/3/2007	45.58
E-6	8/1/2007	45.58
E-6	11/6/2007	45.55
E-6	2/22/2008	45.94
E-6	5/2/2008	45.99
E-6	8/6/2008	45.62
E-6	11/17/2008	54.35
E-6	2/18/2009	45.34
E-6	5/4/2009	47.06
E-6	8/3/2009	44.83
E-6	11/2/2009	45.90
E-6	2/2/2010	46.40
E-6	5/4/2010	46.26
E-6	8/2/2010	46.72
E-6	11/8/2010	46.18
E-6	2/4/2011	47.10
E-6	5/2/2011	47.69
E-6	8/1/2011	47.55
E-6	2/1/2012	46.14
E-6	5/2/2012	46.69
E-6	8/1/2012	45.75
E-6	11/1/2012	45.73
E-6	2/1/2013	46.27
E-6	5/1/2013	45.80
E-6	8/1/2013	45.51
E-6	11/6/2013	45.08
E-6	2/4/2014	44.58
E-6	5/2/2014	45.42
E-6	8/4/2014	45.74
E-6	11/3/2014	45.43
E-6	2/2/2015	45.95
E-6	5/1/2015	46.10
E-6	8/3/2015	46.37
E-6	11/2/2015	45.34
E-6	2/1/2016	46.47
E-6	5/3/2016	46.95
E-6	8/2/2016	46.64
E-6	11/4/2016	46.00
E-7	2/2/2000	57.14

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-7	8/7/2000	64.23
E-7	8/4/2001	57.39
E-7	2/13/2002	66.67
E-7	5/1/2002	70.40
E-7	8/2/2002	66.36
E-7	11/8/2002	59.29
E-7	2/5/2003	76.00
E-7	5/7/2003	62.34
E-7	2/6/2004	75.98
E-7	5/10/2004	75.45
E-7	8/2/2004	74.83
E-7	11/13/2004	73.48
E-7	5/2/2005	78.16
E-7	8/1/2005	78.57
E-7	11/1/2005	81.52
E-7	2/1/2006	83.97
E-7	5/8/2006	84.27
E-7	5/30/2006	83.78
E-7	8/2/2006	82.89
E-7	11/9/2006	82.23
E-7	2/1/2007	84.74
E-7	5/3/2007	85.19
E-7	8/1/2007	84.90
E-7	11/6/2007	84.77
E-7	2/22/2008	86.03
E-7	5/2/2008	85.92
E-7	8/6/2008	84.82
E-7	11/17/2008	84.26
E-7	2/18/2009	84.66
E-7	5/4/2009	86.27
E-7	8/3/2009	84.95
E-7	11/2/2009	84.69
E-7	2/2/2010	87.10
E-7	5/4/2010	86.51
E-7	8/2/2010	86.66
E-7	11/8/2010	80.69
E-7	2/4/2011	82.46
E-7	5/2/2011	83.29
E-7	8/1/2011	81.57
E-7	2/1/2012	77.35
E-7	5/2/2012	80.01
E-7	8/1/2012	76.46
E-7	11/1/2012	75.81
E-7	2/1/2013	77.16
E-7	5/1/2013	75.93
E-7	8/1/2013	75.36
E-7	11/6/2013	74.38
E-7	2/4/2014	75.23
E-7	5/2/2014	78.19
E-7	8/4/2014	78.11
E-7	11/3/2014	76.97
E-7	2/2/2015	78.39
E-7	5/1/2015	77.23
E-7	8/3/2015	78.03

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-7	11/2/2015	74.99
E-7	2/1/2016	78.26
E-7	5/3/2016	78.50
E-7	8/2/2016	76.89
E-7	11/4/2016	76.23
DP-1	2/2/2000	65.52
DP-1	8/7/2000	56.51
DP-1	8/4/2001	57.55
DP-1	2/13/2002	57.23
DP-1	5/1/2002	68.95
DP-1	8/2/2002	52.36
DP-1	11/8/2002	62.58
DP-1	2/5/2003	58.47
DP-1	5/7/2003	57.74
DP-1	2/6/2004	55.48
DP-1	5/10/2004	53.26
DP-1	8/2/2004	56.33
DP-1	11/13/2004	59.05
DP-1	5/2/2005	68.40
DP-1	8/1/2005	68.90
DP-1	11/1/2005	74.33
DP-1	2/1/2006	72.15
DP-1	5/8/2006	71.54
DP-1	5/30/2006	69.56
DP-1	8/2/2006	68.53
DP-1	11/9/2006	70.33
DP-1	2/1/2007	72.30
DP-1	5/3/2007	75.49
DP-1	8/1/2007	80.68
DP-1	11/6/2007	80.80
DP-1	2/22/2008	72.65
DP-1	5/2/2008	76.05
DP-1	8/6/2008	77.60
DP-1	11/17/2008	77.59
DP-1	2/18/2009	75.83
DP-1	5/4/2009	77.82
DP-1	8/3/2009	77.32
DP-1	11/2/2009	76.62
DP-1	5/4/2010	77.99
DP-1	8/2/2010	78.56
DP-1	11/8/2010	76.80
DP-1	2/4/2011	77.75
DP-1	5/2/2011	78.75
DP-1	8/1/2011	76.32
DP-1	2/1/2012	58.58
DP-1	5/2/2012	59.51
DP-1	8/1/2012	49.68
DP-1	11/1/2012	51.10
DP-1	2/1/2013	50.49
DP-1	5/1/2013	50.63
DP-1	8/1/2013	50.48
DP-1	11/6/2013	52.55
DP-1	2/4/2014	50.38

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
DP-1	5/2/2014	50.39
DP-1	8/4/2014	50.50
DP-1	11/3/2014	57.69
DP-1	2/2/2015	50.58
DP-1	5/1/2015	50.48
DP-1	8/3/2015	50.49
DP-1	11/2/2015	49.90
DP-1	2/1/2016	52.36
DP-1	5/3/2016	51.78
DP-1	8/2/2016	58.52
DP-1	11/3/2016	50.46
East Yard Corrective Action Area Wells		
BOP-19(i)	2/9/1988	77.71
BOP-19(i)	11/4/1988	77.15
BOP-19(i)	2/9/1989	79.13
BOP-19(i)	5/17/1989	75.41
BOP-19(i)	8/24/1989	76.17
BOP-19(i)	11/16/1989	75.65
BOP-19(i)	2/28/1990	74.86
BOP-19(i)	5/10/1990	74.53
BOP-19(i)	8/24/1990	73.39
BOP-19(i)	11/29/1990	74.65
BOP-19(i)	2/28/1991	74.22
BOP-19(i)	5/23/1991	73.88
BOP-19(i)	8/22/1991	72.75
BOP-19(i)	11/21/1991	72.57
BOP-19(i)	2/27/1992	72.70
BOP-19(i)	5/28/1992	73.23
BOP-19(i)	8/27/1992	73.34
BOP-19(i)	11/25/1992	73.32
BOP-19(i)	2/24/1993	73.71
BOP-19(i)	5/27/1993	73.67
BOP-19(i)	8/26/1993	73.75
BOP-19(i)	11/23/1993	73.34
BOP-19(i)	2/24/1994	73.47
BOP-19(i)	5/26/1994	74.33
BOP-19(i)	8/24/1994	75.26
BOP-19(i)	11/29/1994	76.07
BOP-19(i)	2/2/1995	75.73
BOP-19(i)	5/25/1995	76.41
BOP-19(i)	8/31/1995	74.29
BOP-19(i)	11/28/1995	74.44
BOP-19(i)	2/29/1996	78.01
BOP-19(i)	5/29/1996	75.73
BOP-19(i)	8/29/1996	74.63
BOP-19(i)	11/20/1996	75.13
BOP-19(i)	2/26/1997	77.76
BOP-19(i)	5/28/1997	76.41
BOP-19(i)	8/29/1997	76.46
BOP-19(i)	11/21/1997	76.25
BOP-19(i)	2/23/1998	76.74
BOP-19(i)	8/5/1998	75.78
BOP-19(i)	2/4/1999	75.72

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-19(i)	5/12/1999	76.57
BOP-19(i)	8/3/1999	75.63
BOP-19(i)	11/2/1999	74.43
BOP-19(i)	2/5/2000	75.40
BOP-19(i)	5/3/2000	75.22
BOP-19(i)	8/7/2000	74.72
BOP-19(i)	11/8/2000	74.20
BOP-19(i)	2/3/2001	74.32
BOP-19(i)	5/4/2001	74.46
BOP-19(i)	8/4/2001	74.10
BOP-19(i)	2/8/2002	75.38
BOP-19(i)	5/1/2002	75.21
BOP-19(i)	8/2/2002	74.44
BOP-19(i)	2/6/2003	76.98
BOP-19(i)	2/6/2004	78.25
BOP-19(i)	2/1/2005	76.34
BOP-19(i)	8/1/2005	76.42
BOP-19(i)	2/2/2006	78.22
BOP-19(i)	8/2/2006	76.57
BOP-19(i)	2/1/2007	77.67
BOP-19(i)	5/2/2007	77.54
BOP-19(i)	8/14/2007	76.16
BOP-19(i)	11/6/2007	76.00
BOP-19(i)	2/22/2008	78.19
BOP-19(i)	8/6/2008	76.44
BOP-19(i)	2/3/2009	77.39
BOP-19(i)	8/5/2009	76.57
BOP-19(i)	2/2/2010	78.57
BOP-19(i)	8/5/2010	77.38
BOP-19(i)	2/4/2011	78.25
BOP-19(i)	8/1/2011	77.37
BOP-19(i)	2/1/2012	78.00
BOP-19(i)	8/1/2012	77.19
BOP-19(i)	2/1/2013	81.32
BOP-19(i)	8/1/2013	76.52
BOP-48(i)	2/24/1994	82.73
BOP-48(i)	5/26/1994	82.94
BOP-48(i)	8/24/1994	81.10
BOP-48(i)	11/29/1994	82.61
BOP-48(i)	2/3/1995	83.94
BOP-48(i)	5/25/1995	82.51
BOP-48(i)	8/31/1995	81.23
BOP-48(i)	11/28/1995	83.28
BOP-48(i)	2/29/1996	84.01
BOP-48(i)	5/30/1996	82.91
BOP-48(i)	8/29/1996	81.46
BOP-48(i)	11/20/1996	83.65
BOP-48(i)	2/26/1997	83.33
BOP-48(i)	5/28/1997	82.31
BOP-48(i)	8/1/1997	81.66
BOP-48(i)	8/29/1997	81.40
BOP-48(i)	11/21/1997	81.95
BOP-48(i)	2/23/1998	83.71

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-48(i)	8/5/1998	81.07
BOP-48(i)	2/4/1999	83.50
BOP-48(i)	5/12/1999	82.17
BOP-48(i)	8/3/1999	81.40
BOP-48(i)	11/2/1999	80.58
BOP-48(i)	2/5/2000	83.00
BOP-48(i)	5/3/2000	81.99
BOP-48(i)	8/7/2000	81.07
BOP-48(i)	11/8/2000	80.31
BOP-48(i)	2/3/2001	81.21
BOP-48(i)	5/4/2001	81.50
BOP-48(i)	8/4/2001	80.31
BOP-48(i)	2/8/2002	83.53
BOP-48(i)	5/1/2002	82.10
BOP-48(i)	8/2/2002	80.88
BOP-48(i)	2/5/2003	83.52
BOP-48(i)	2/6/2004	83.72
BOP-48(i)	2/1/2005	82.04
BOP-48(i)	8/1/2005	81.54
BOP-48(i)	2/2/2006	84.36
BOP-48(i)	8/2/2006	81.16
BOP-48(i)	2/1/2007	82.75
BOP-48(i)	5/2/2007	82.50
BOP-48(i)	8/1/2007	81.33
BOP-48(i)	11/6/2007	81.17
BOP-48(i)	2/22/2008	82.96
BOP-48(i)	8/6/2008	81.20
BOP-48(i)	2/3/2009	82.45
BOP-48(i)	8/5/2009	81.24
BOP-48(i)	2/2/2010	83.25
BOP-48(i)	8/5/2010	81.66
BOP-48(i)	2/4/2011	82.98
BOP-48(i)	8/1/2011	81.65
BOP-48(i)	2/1/2012	83.35
BOP-48(i)	8/1/2012	81.67
BOP-48(i)	2/1/2013	83.92
BOP-48(i)	8/1/2013	81.16
BOP-48(i)	2/4/2014	82.61
BOP-48(i)	8/4/2014	81.51
BOP-48(i)	2/2/2015	82.79
BOP-48(i)	8/3/2015	80.96
BOP-48(i)	2/1/2016	84.09
BOP-48(i)	8/2/2016	81.44
BOP-36(i)	2/27/1992	78.20
BOP-36(i)	5/28/1992	75.38
BOP-36(i)	5/27/1993	75.67
BOP-36(i)	8/26/1993	74.12
BOP-36(i)	11/23/1993	74.54
BOP-36(i)	2/24/1994	75.64
BOP-36(i)	5/26/1994	75.66
BOP-36(i)	8/24/1994	75.27
BOP-36(i)	11/29/1994	75.73
BOP-36(i)	2/3/1995	75.73

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-36(i)	5/25/1995	75.56
BOP-36(i)	8/31/1995	75.20
BOP-36(i)	11/28/1995	75.76
BOP-36(i)	2/29/1996	75.70
BOP-36(i)	5/29/1996	75.74
BOP-36(i)	8/29/1996	70.79
BOP-36(i)	11/20/1996	75.88
BOP-36(i)	2/26/1997	75.68
BOP-36(i)	5/28/1997	75.60
BOP-36(i)	8/29/1997	70.49
BOP-36(i)	11/21/1997	75.33
BOP-36(i)	2/23/1998	75.70
BOP-36(i)	8/5/1998	75.19
BOP-36(i)	2/4/1999	75.69
BOP-36(i)	5/12/1999	75.59
BOP-36(i)	8/3/1999	75.20
BOP-36(i)	11/2/1999	72.63
BOP-36(i)	2/5/2000	75.67
BOP-36(i)	5/3/2000	75.39
BOP-36(i)	8/7/2000	74.99
BOP-36(i)	11/8/2000	71.54
BOP-36(i)	2/3/2001	74.68
BOP-36(i)	5/4/2001	73.71
BOP-36(i)	8/4/2001	74.54
BOP-36(i)	2/8/2002	75.76
BOP-36(i)	5/1/2002	75.14
BOP-36(i)	8/2/2002	74.93
BOP-36(i)	2/5/2003	75.72
BOP-36(i)	2/6/2004	75.70
BOP-36(i)	2/1/2005	75.31
BOP-36(i)	8/1/2005	75.29
BOP-36(i)	2/2/2006	75.64
BOP-36(i)	8/2/2006	75.21
BOP-36(i)	2/1/2007	75.56
BOP-36(i)	5/2/2007	75.61
BOP-36(i)	8/1/2007	75.27
BOP-36(i)	11/6/2007	74.80
BOP-36(i)	2/22/2008	72.32
BOP-36(i)	8/6/2008	75.19
BOP-36(i)	2/3/2009	76.21
BOP-36(i)	8/5/2009	75.27
BOP-36(i)	2/2/2010	75.60
BOP-36(i)	8/5/2010	75.43
BOP-36(i)	2/4/2011	75.46
BOP-36(i)	8/1/2011	75.36
BOP-36(i)	2/1/2012	75.76
BOP-36(i)	8/1/2012	75.45
BOP-36(i)	2/1/2013	75.77
BOP-36(i)	8/1/2013	75.28
E-9	2/2/2000	72.01
E-9	8/7/2000	73.29
E-9	8/4/2001	70.33
E-9	5/1/2002	71.97

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Location	Sample Date	Groundwater Elevation (ft)
E-9	8/2/2002	69.30
E-9	11/8/2002	68.18
E-9	2/5/2003	73.49
E-9	5/7/2003	74.58
E-9	2/6/2004	74.58
E-9	5/10/2004	73.19
E-9	8/2/2004	72.50
E-9	11/13/2004	72.39
E-9	5/2/2005	73.18
E-9	8/1/2005	73.10
E-9	11/1/2005	72.58
E-9	2/1/2006	74.56
E-9	5/8/2006	74.24
E-9	5/30/2006	74.33
E-9	8/2/2006	73.71
E-9	11/9/2006	72.98
E-9	2/1/2007	74.13
E-9	5/3/2007	74.29
E-9	8/1/2007	72.97
E-9	11/6/2007	72.71
E-9	2/22/2008	74.56
E-9	5/2/2008	74.32
E-9	8/6/2008	73.08
E-9	11/17/2008	73.24
E-9	2/18/2009	73.61
E-9	5/4/2009	74.14
E-9	8/3/2009	73.16
E-9	11/2/2009	72.81
E-9	2/2/2010	72.95
E-9	5/4/2010	73.16
E-9	8/2/2010	72.81
E-9	11/8/2010	72.39
E-9	2/4/2011	74.77
E-9	5/2/2011	75.39
E-9	8/1/2011	74.08
E-9	2/1/2012	74.36
E-9	5/2/2012	75.31
E-9	8/1/2012	73.70
E-9	11/1/2012	73.11
E-9	2/1/2013	75.43
E-9	5/1/2013	73.83
E-9	8/1/2013	73.10
E-9	11/6/2013	72.61
E-9	2/4/2014	72.84
E-9	5/2/2014	73.59
E-9	8/4/2014	73.31
E-9	11/3/2014	72.99
E-9	2/2/2015	74.34
E-9	5/1/2015	73.88
E-9	8/3/2015	72.89
E-9	11/2/2015	72.50
E-9	2/1/2016	75.08
E-9	5/3/2016	74.35
E-9	8/2/2016	73.19

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-9	11/3/2016	73.29
East Corrective Action Area Wells		
BOP-12(i)	5/26/1987	90.34
BOP-12(i)	2/9/1988	89.31
BOP-12(i)	8/24/1988	89.06
BOP-12(i)	11/4/1988	87.50
BOP-12(i)	2/9/1989	86.56
BOP-12(i)	5/17/1989	88.74
BOP-12(i)	8/24/1989	86.52
BOP-12(i)	11/16/1989	85.89
BOP-12(i)	2/28/1990	87.85
BOP-12(i)	5/10/1990	87.18
BOP-12(i)	8/24/1990	85.79
BOP-12(i)	11/29/1990	86.20
BOP-12(i)	2/28/1991	88.48
BOP-12(i)	5/23/1991	87.70
BOP-12(i)	8/22/1991	85.79
BOP-12(i)	11/21/1991	82.03
BOP-12(i)	2/27/1992	84.57
BOP-12(i)	5/28/1992	85.38
BOP-12(i)	8/27/1992	84.10
BOP-12(i)	11/25/1992	83.11
BOP-12(i)	2/24/1993	84.75
BOP-12(i)	5/27/1993	86.06
BOP-12(i)	8/26/1993	85.11
BOP-12(i)	11/23/1993	83.51
BOP-12(i)	2/24/1994	84.87
BOP-12(i)	5/26/1994	85.07
BOP-12(i)	8/24/1994	83.57
BOP-12(i)	11/28/1994	84.85
BOP-12(i)	2/2/1995	86.13
BOP-12(i)	5/24/1995	86.53
BOP-12(i)	8/30/1995	84.99
BOP-12(i)	11/28/1995	85.28
BOP-12(i)	2/28/1996	88.08
BOP-12(i)	5/29/1996	87.31
BOP-12(i)	8/29/1996	86.20
BOP-12(i)	11/20/1996	86.38
BOP-12(i)	2/26/1997	88.24
BOP-12(i)	5/28/1997	87.41
BOP-12(i)	8/29/1997	86.20
BOP-12(i)	11/21/1997	85.28
BOP-12(i)	2/23/1998	86.77
BOP-12(i)	8/5/1998	85.24
BOP-12(i)	2/4/1999	85.33
BOP-12(i)	5/12/1999	84.87
BOP-12(i)	8/3/1999	84.08
BOP-12(i)	11/2/1999	82.98
BOP-12(i)	2/5/2000	84.57
BOP-12(i)	5/3/2000	84.30
BOP-12(i)	8/7/2000	83.67
BOP-12(i)	11/8/2000	81.75
BOP-12(i)	2/2/2001	81.86

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BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-12(i)	5/4/2001	82.83
BOP-12(i)	8/4/2001	81.88
BOP-12(i)	2/8/2002	83.07
BOP-12(i)	5/1/2002	83.92
BOP-12(i)	8/2/2002	82.78
BOP-12(i)	2/5/2003	83.06
BOP-12(i)	2/6/2004	84.44
BOP-12(i)	2/1/2005	83.16
BOP-12(i)	8/1/2005	84.73
BOP-12(i)	2/2/2006	86.44
BOP-12(i)	8/2/2006	84.96
BOP-12(i)	2/1/2007	86.17
BOP-12(i)	5/2/2007	86.61
BOP-12(i)	8/1/2007	85.57
BOP-12(i)	11/6/2007	84.74
BOP-12(i)	2/22/2008	86.89
BOP-12(i)	8/6/2008	85.64
BOP-12(i)	2/2/2009	86.09
BOP-12(i)	8/5/2009	86.44
BOP-12(i)	2/2/2010	87.53
BOP-12(i)	8/5/2010	87.53
BOP-12(i)	2/4/2011	88.48
BOP-12(i)	8/1/2011	87.72
BOP-12(i)	2/1/2012	86.51
BOP-12(i)	8/1/2012	86.21
BOP-12(i)	2/1/2013	86.93
BOP-12(i)	8/1/2013	85.40
Decommissioned 12/4/2015		
BOP-58(i)	8/24/1994	91.10
BOP-58(i)	11/29/1994	93.72
BOP-58(i)	2/2/1995	95.51
BOP-58(i)	5/24/1995	93.60
BOP-58(i)	8/30/1995	91.50
BOP-58(i)	11/28/1995	92.35
BOP-58(i)	2/27/1996	96.04
BOP-58(i)	5/29/1996	94.46
BOP-58(i)	8/28/1996	94.22
BOP-58(i)	11/20/1996	94.48
BOP-58(i)	2/26/1997	94.46
BOP-58(i)	5/28/1997	93.71
BOP-58(i)	8/29/1997	92.70
BOP-58(i)	11/21/1997	90.44
BOP-58(i)	2/23/1998	91.91
BOP-58(i)	8/5/1998	89.55
BOP-58(i)	2/4/1999	91.50
BOP-58(i)	5/12/1999	89.90
BOP-58(i)	8/3/1999	92.99
BOP-58(i)	11/2/1999	89.29
BOP-58(i)	2/5/2000	93.28
BOP-58(i)	5/3/2000	91.76
BOP-58(i)	8/7/2000	91.09
BOP-58(i)	11/8/2000	88.33
BOP-58(i)	2/3/2001	89.28

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-58(i)	5/4/2001	90.01
BOP-58(i)	8/4/2001	88.73
BOP-58(i)	2/8/2002	90.86
BOP-58(i)	5/1/2002	90.39
BOP-58(i)	8/2/2002	90.60
BOP-58(i)	2/5/2003	94.29
BOP-58(i)	2/6/2004	92.73
BOP-58(i)	2/1/2005	89.88
BOP-58(i)	8/1/2005	99.85
BOP-58(i)	2/2/2006	92.99
BOP-58(i)	8/2/2006	89.60
BOP-58(i)	2/1/2007	91.56
BOP-58(i)	5/2/2007	91.19
BOP-58(i)	8/1/2007	89.52
BOP-58(i)	11/6/2007	88.99
BOP-58(i)	2/22/2008	92.08
BOP-58(i)	8/6/2008	89.64
BOP-58(i)	2/2/2009	91.37
BOP-58(i)	8/5/2009	90.02
BOP-58(i)	2/26/2010	93.27
BOP-58(i)	8/5/2010	90.75
BOP-58(i)	2/4/2011	91.95
BOP-58(i)	8/1/2011	90.66
BOP-58(i)	2/1/2012	92.78
BOP-58(i)	8/1/2012	90.10
BOP-58(i)	2/1/2013	92.99
BOP-58(i)	8/1/2013	89.26
E-8	2/2/2000	74.46
E-8	8/7/2000	74.80
E-8	8/4/2001	77.00
E-8	2/13/2002	77.56
E-8	5/1/2002	80.67
E-8	8/2/2002	70.20
E-8	11/8/2002	63.98
E-8	2/5/2003	84.35
E-8	5/7/2003	70.29
E-8	2/6/2004	84.07
E-8	5/10/2004	81.72
E-8	8/2/2004	80.19
E-8	11/13/2004	80.17
E-8	5/2/2005	82.96
E-8	8/1/2005	82.23
E-8	11/1/2005	81.13
E-8	2/1/2006	84.53
E-8	5/8/2006	83.27
E-8	5/30/2006	82.76
E-8	8/2/2006	81.76
E-8	11/9/2006	82.73
E-8	2/1/2007	83.79
E-8	5/3/2007	83.71
E-8	8/1/2007	81.83
E-8	11/6/2007	81.76
E-8	2/22/2008	83.53

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-8	5/2/2008	83.96
E-8	8/6/2008	81.99
E-8	11/17/2008	82.78
E-8	2/18/2009	83.18
E-8	5/4/2009	84.53
E-8	8/3/2009	82.27
E-8	11/2/2009	83.35
E-8	2/2/2010	85.83
E-8	5/4/2010	84.70
E-8	8/2/2010	84.00
E-8	11/8/2010	83.68
E-8	2/4/2011	84.67
E-8	5/2/2011	85.44
E-8	8/1/2011	83.55
E-8	2/1/2012	84.40
E-8	5/2/2012	85.18
E-8	8/1/2012	83.04
E-8	11/1/2012	82.43
E-8	2/1/2013	85.14
E-8	5/1/2013	83.22
E-8	8/1/2013	81.31
E-8	11/6/2013	80.55
E-8	2/4/2014	81.93
E-8	5/2/2014	84.68
E-8	8/4/2014	82.93
E-8	11/3/2014	82.63
E-8	2/2/2015	84.53
E-8	5/1/2015	83.43
E-8	8/3/2015	82.62
E-8	11/2/2015	81.18
E-8	2/1/2016	85.14
E-8	5/3/2016	84.24
E-8	8/2/2016	82.33
E-8	11/3/2016	83.47
Southwest Corrective Action Area Wells		
BOP-9(i)	5/26/1987	34.32
BOP-9(i)	2/9/1988	32.08
BOP-9(i)	8/24/1988	33.52
BOP-9(i)	11/4/1988	32.78
BOP-9(i)	2/9/1989	34.06
BOP-9(i)	5/17/1989	29.14
BOP-9(i)	8/24/1989	24.67
BOP-9(i)	11/16/1989	23.10
BOP-9(i)	2/28/1990	17.91
BOP-9(i)	5/10/1990	15.78
BOP-9(i)	8/24/1990	14.08
BOP-9(i)	11/29/1990	13.38
BOP-9(i)	2/28/1991	14.93
BOP-9(i)	5/23/1991	11.70
BOP-9(i)	8/22/1991	10.47
BOP-9(i)	11/21/1991	8.71
BOP-9(i)	2/27/1992	11.16
BOP-9(i)	5/28/1992	9.24

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-9(i)	8/27/1992	8.57
BOP-9(i)	11/25/1992	7.86
BOP-9(i)	2/24/1993	8.43
BOP-9(i)	5/27/1993	9.33
BOP-9(i)	8/26/1993	8.92
BOP-9(i)	11/23/1993	7.89
BOP-9(i)	2/24/1994	8.39
BOP-9(i)	5/26/1994	9.07
BOP-9(i)	8/24/1994	8.19
BOP-9(i)	11/28/1994	13.71
BOP-9(i)	2/3/1995	12.67
BOP-9(i)	5/24/1995	12.31
BOP-9(i)	8/30/1995	9.33
BOP-9(i)	11/28/1995	8.18
BOP-9(i)	2/27/1996	12.47
BOP-9(i)	5/29/1996	11.44
BOP-9(i)	8/28/1996	12.06
BOP-9(i)	11/20/1996	10.29
BOP-9(i)	2/26/1997	12.70
BOP-9(i)	5/28/1997	12.43
BOP-9(i)	8/29/1997	11.49
BOP-9(i)	11/21/1997	8.85
BOP-9(i)	2/23/1998	10.06
BOP-9(i)	8/5/1998	9.46
BOP-9(i)	2/4/1999	8.18
BOP-9(i)	5/12/1999	7.85
BOP-9(i)	8/3/1999	7.99
BOP-9(i)	11/2/1999	7.23
BOP-9(i)	2/5/2000	7.67
BOP-9(i)	5/3/2000	9.73
BOP-9(i)	8/7/2000	12.90
BOP-9(i)	11/8/2000	12.57
BOP-9(i)	2/3/2001	11.47
BOP-9(i)	5/4/2001	11.59
BOP-9(i)	8/4/2001	11.24
BOP-9(i)	2/8/2002	11.98
BOP-9(i)	5/1/2002	14.39
BOP-9(i)	8/2/2002	13.17
BOP-9(i)	2/5/2003	13.14
BOP-9(i)	2/6/2004	11.48
BOP-9(i)	2/1/2005	10.45
BOP-9(i)	8/1/2005	11.51
BOP-9(i)	2/2/2006	14.84
BOP-9(i)	8/2/2006	16.48
BOP-9(i)	2/1/2007	15.50
BOP-9(i)	5/2/2007	16.41
BOP-9(i)	8/1/2007	16.26
BOP-9(i)	11/6/2007	12.59
BOP-9(i)	2/22/2008	17.19
BOP-9(i)	8/6/2008	17.72
BOP-9(i)	2/2/2009	27.42
BOP-9(i)	8/5/2009	28.90
BOP-9(i)	2/2/2010	29.89
BOP-9(i)	8/5/2010	31.17

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-9(i)	2/4/2011	33.69
BOP-9(i)	8/1/2011	35.80
BOP-9(i)	2/1/2012	34.99
BOP-9(i)	8/1/2012	36.02
BOP-9(i)	2/1/2013	36.58
BOP-9(i)	8/1/2013	34.20
BOP-9(i)	2/4/2014	34.36
BOP-9(i)	8/4/2014	33.14
BOP-9(i)	2/2/2015	33.22
BOP-9(i)	8/3/2015	33.88
BOP-9(i)	2/1/2016	35.31
BOP-9(i)	8/2/2016	35.61
BOP-11(i)	5/26/1987	31.25
BOP-11(i)	2/9/1988	29.32
BOP-11(i)	8/24/1988	30.33
BOP-11(i)	11/4/1988	29.77
BOP-11(i)	2/9/1989	31.08
BOP-11(i)	5/17/1989	24.12
BOP-11(i)	8/24/1989	19.82
BOP-11(i)	11/16/1989	18.70
BOP-11(i)	2/28/1990	11.08
BOP-11(i)	5/10/1990	9.13
BOP-11(i)	8/24/1990	7.61
BOP-11(i)	11/29/1990	7.39
BOP-11(i)	2/28/1991	8.67
BOP-11(i)	5/23/1991	6.83
BOP-11(i)	8/22/1991	5.65
BOP-11(i)	11/21/1991	4.59
BOP-11(i)	2/27/1992	5.93
BOP-11(i)	5/28/1992	5.01
BOP-11(i)	8/27/1992	4.29
BOP-11(i)	11/25/1992	4.02
BOP-11(i)	2/24/1993	4.29
BOP-11(i)	5/27/1993	5.16
BOP-11(i)	8/26/1993	4.66
BOP-11(i)	11/23/1993	3.74
BOP-11(i)	2/24/1994	4.32
BOP-11(i)	5/26/1994	4.63
BOP-11(i)	8/24/1994	3.78
BOP-11(i)	11/28/1994	9.06
BOP-11(i)	2/2/1995	8.55
BOP-11(i)	5/24/1995	7.43
BOP-11(i)	8/30/1995	4.19
BOP-11(i)	11/28/1995	3.93
BOP-11(i)	2/28/1996	8.41
BOP-11(i)	5/29/1996	5.92
BOP-11(i)	8/29/1996	7.10
BOP-11(i)	11/20/1996	5.52
BOP-11(i)	2/26/1997	7.22
BOP-11(i)	5/28/1997	7.66
BOP-11(i)	8/29/1997	6.08
BOP-11(i)	11/21/1997	3.70
BOP-11(i)	2/23/1998	4.94

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-11(i)	8/5/1998	3.87
BOP-11(i)	2/4/1999	3.79
BOP-11(i)	5/12/1999	2.40
BOP-11(i)	8/3/1999	2.45
BOP-11(i)	11/2/1999	2.16
BOP-11(i)	2/5/2000	2.03
BOP-11(i)	5/3/2000	6.57
BOP-11(i)	8/7/2000	9.20
BOP-11(i)	11/8/2000	9.34
BOP-11(i)	2/2/2001	8.17
BOP-11(i)	5/4/2001	8.29
BOP-11(i)	8/4/2001	8.21
BOP-11(i)	2/8/2002	8.82
BOP-11(i)	5/1/2002	11.14
BOP-11(i)	8/2/2002	9.79
BOP-11(i)	2/5/2003	10.77
BOP-11(i)	2/6/2004	8.47
BOP-11(i)	2/1/2005	7.52
BOP-11(i)	8/1/2005	8.29
BOP-11(i)	2/2/2006	12.18
BOP-11(i)	8/2/2006	13.44
BOP-11(i)	2/1/2007	13.14
BOP-11(i)	5/2/2007	13.74
BOP-11(i)	8/1/2007	13.25
BOP-11(i)	11/6/2007	9.50
BOP-11(i)	2/22/2008	14.84
BOP-11(i)	8/6/2008	10.14
BOP-11(i)	8/5/2009	24.41
BOP-11(i)	2/2/2010	25.22
BOP-11(i)	8/5/2010	27.13
BOP-11(i)	8/1/2011	31.80
BOP-11(i)	8/1/2012	32.32
BOP-11(i)	8/1/2013	30.34
Decommissioned 12/3/2015		
Downgradient Corrective Action Area Wells		
BOP-7(i)	5/26/1987	25.00
BOP-7(i)	2/9/1988	23.64
BOP-7(i)	8/24/1988	24.05
BOP-7(i)	11/4/1988	23.50
BOP-7(i)	2/9/1989	24.65
BOP-7(i)	5/17/1989	12.83
BOP-7(i)	8/24/1989	9.98
BOP-7(i)	11/16/1989	8.77
BOP-7(i)	2/28/1990	2.57
BOP-7(i)	5/10/1990	0.98
BOP-7(i)	8/24/1990	-1.07
BOP-7(i)	11/29/1990	-0.04
BOP-7(i)	2/28/1991	1.29
BOP-7(i)	5/23/1991	-0.11
BOP-7(i)	8/22/1991	-1.42
BOP-7(i)	11/21/1991	-1.75
BOP-7(i)	2/27/1992	-0.32
BOP-7(i)	5/28/1992	-1.38

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
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Location	Sample Date	Groundwater Elevation (ft)
BOP-7(i)	8/27/1992	-1.77
BOP-7(i)	11/25/1992	-1.67
BOP-7(i)	2/24/1993	-1.69
BOP-7(i)	5/27/1993	-0.71
BOP-7(i)	8/26/1993	-1.28
BOP-7(i)	11/23/1993	-2.12
BOP-7(i)	2/25/1994	-0.92
BOP-7(i)	5/26/1994	-1.34
BOP-7(i)	8/24/1994	-2.19
BOP-7(i)	11/28/1994	2.08
BOP-7(i)	2/2/1995	2.54
BOP-7(i)	5/24/1995	0.88
BOP-7(i)	8/30/1995	-3.62
BOP-7(i)	11/28/1995	-3.05
BOP-7(i)	2/28/1996	2.26
BOP-7(i)	5/29/1996	-1.60
BOP-7(i)	8/29/1996	-0.82
BOP-7(i)	11/20/1996	-1.62
BOP-7(i)	2/26/1997	-0.76
BOP-7(i)	5/28/1997	3.39
BOP-7(i)	8/29/1997	-2.46
BOP-7(i)	11/21/1997	-4.47
BOP-7(i)	2/23/1998	-3.11
BOP-7(i)	8/5/1998	-4.66
BOP-7(i)	2/4/1999	-2.32
BOP-7(i)	5/12/1999	-4.50
BOP-7(i)	8/3/1999	-4.11
BOP-7(i)	11/2/1999	-5.15
BOP-7(i)	2/5/2000	-4.88
BOP-7(i)	5/3/2000	0.30
BOP-7(i)	8/7/2000	1.19
BOP-7(i)	11/8/2000	1.91
BOP-7(i)	2/2/2001	-0.02
BOP-7(i)	5/4/2001	0.51
BOP-7(i)	8/4/2001	1.46
BOP-7(i)	2/8/2002	1.98
BOP-7(i)	5/1/2002	5.73
BOP-7(i)	8/2/2002	2.08
BOP-7(i)	2/5/2003	4.48
BOP-7(i)	2/6/2004	1.32
BOP-7(i)	2/1/2005	-0.23
BOP-7(i)	8/1/2005	0.47
BOP-7(i)	2/2/2006	6.28
BOP-7(i)	8/2/2006	5.08
BOP-7(i)	2/1/2007	5.08
BOP-7(i)	5/2/2007	5.60
BOP-7(i)	8/1/2007	4.20
BOP-7(i)	11/6/2007	1.42
BOP-7(i)	2/22/2008	7.63
BOP-7(i)	8/6/2008	6.47
BOP-7(i)	2/2/2009	17.83
BOP-7(i)	8/5/2009	14.56
BOP-7(i)	2/2/2010	17.10
BOP-7(i)	8/5/2010	16.77

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-7(i)	2/4/2011	19.08
BOP-7(i)	8/1/2011	21.18
BOP-7(i)	2/1/2012	20.48
BOP-7(i)	8/1/2012	22.60
BOP-7(i)	2/1/2013	23.83
BOP-7(i)	8/1/2013	20.81
BOP-7(i)	2/4/2014	19.68
BOP-7(i)	8/4/2014	21.31
BOP-7(i)	2/2/2015	21.97
BOP-7(i)	8/3/2015	23.21
BOP-7(i)	2/1/2016	24.98
BOP-7(i)	5/3/2016	25.47
BOP-7(i)	8/2/2016	24.68
BOP-7(i)	11/4/2016	24.98
D-2(i)	8/24/1988	10.14
D-2(i)	11/4/1988	10.14
D-2(i)	11/30/1988	11.05
D-2(i)	2/9/1989	10.74
D-2(i)	5/17/1989	10.45
D-2(i)	8/24/1989	9.85
D-2(i)	11/16/1989	9.24
D-2(i)	2/28/1990	10.48
D-2(i)	5/10/1990	10.05
D-2(i)	8/24/1990	8.85
D-2(i)	11/29/1990	9.79
D-2(i)	2/28/1991	10.79
D-2(i)	5/23/1991	10.17
D-2(i)	8/22/1991	7.71
D-2(i)	11/21/1991	9.66
D-2(i)	2/27/1992	10.50
D-2(i)	5/28/1992	9.16
D-2(i)	8/27/1992	8.74
D-2(i)	11/25/1992	9.44
D-2(i)	2/24/1993	8.90
D-2(i)	5/27/1993	9.81
D-2(i)	8/26/1993	8.89
D-2(i)	11/23/1993	8.12
D-2(i)	2/25/1994	10.80
D-2(i)	5/26/1994	9.08
D-2(i)	8/24/1994	8.61
D-2(i)	11/28/1994	10.08
D-2(i)	2/2/1995	11.77
D-2(i)	5/24/1995	10.47
D-2(i)	8/30/1995	8.03
D-2(i)	11/28/1995	9.96
D-2(i)	2/27/1996	11.93
D-2(i)	5/29/1996	10.15
D-2(i)	8/28/1996	9.47
D-2(i)	11/20/1996	10.69
D-2(i)	2/26/1997	10.54
D-2(i)	5/28/1997	9.64
D-2(i)	8/1/1997	10.06
D-2(i)	8/28/1997	9.65

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-2(i)	11/21/1997	9.34
D-2(i)	2/23/1998	10.45
D-2(i)	8/5/1998	8.84
D-2(i)	2/4/1999	6.50
D-2(i)	5/12/1999	6.95
D-2(i)	8/3/1999	5.52
D-2(i)	11/2/1999	4.59
D-2(i)	2/5/2000	6.11
D-2(i)	5/3/2000	6.10
D-2(i)	8/7/2000	4.90
D-2(i)	11/8/2000	3.88
D-2(i)	2/2/2001	3.26
D-2(i)	5/4/2001	3.92
D-2(i)	8/4/2001	3.75
D-2(i)	2/8/2002	5.81
D-2(i)	5/1/2002	6.99
D-2(i)	8/2/2002	4.47
D-2(i)	2/5/2003	7.11
D-2(i)	2/6/2004	6.12
D-2(i)	2/1/2005	4.17
D-2(i)	8/1/2005	4.17
D-2(i)	2/2/2006	9.15
D-2(i)	8/2/2006	6.30
D-2(i)	2/2/2007	6.93
D-2(i)	5/2/2007	8.30
D-2(i)	8/1/2007	5.51
D-2(i)	11/6/2007	5.51
D-2(i)	2/22/2008	9.20
D-2(i)	8/6/2008	4.57
D-2(i)	2/3/2009	9.92
D-2(i)	2/2/2010	11.14
D-2(i)	8/5/2010	10.79
D-2(i)	2/4/2011	10.67
D-2(i)	8/1/2011	18.77
Decommissioned 10/31/2016		
D-7(i)	8/24/1988	11.95
D-7(i)	11/4/1988	11.76
D-7(i)	11/30/1988	12.58
D-7(i)	2/9/1989	12.50
D-7(i)	5/17/1989	11.32
D-7(i)	8/24/1989	10.56
D-7(i)	11/16/1989	9.64
D-7(i)	2/28/1990	10.19
D-7(i)	5/10/1990	9.61
D-7(i)	8/24/1990	8.54
D-7(i)	11/29/1990	9.25
D-7(i)	2/28/1991	10.59
D-7(i)	5/23/1991	9.96
D-7(i)	8/22/1991	8.28
D-7(i)	11/21/1991	9.05
D-7(i)	2/27/1992	10.00
D-7(i)	5/28/1992	8.62
D-7(i)	8/27/1992	8.33

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-7(i)	11/25/1992	8.81
D-7(i)	2/24/1993	8.12
D-7(i)	5/27/1993	9.09
D-7(i)	8/26/1993	8.36
D-7(i)	11/23/1993	7.58
D-7(i)	2/25/1994	10.30
D-7(i)	5/26/1994	8.43
D-7(i)	8/24/1994	8.09
D-7(i)	11/28/1994	9.57
D-7(i)	2/2/1995	11.45
D-7(i)	5/24/1995	9.72
D-7(i)	8/30/1995	5.42
D-7(i)	11/28/1995	7.17
D-7(i)	2/27/1996	11.44
D-7(i)	5/29/1996	7.49
D-7(i)	8/28/1996	7.15
D-7(i)	11/20/1996	7.90
D-7(i)	2/26/1997	8.12
D-7(i)	5/28/1997	6.69
D-7(i)	8/1/1997	7.93
D-7(i)	8/28/1997	7.06
D-7(i)	11/21/1997	6.34
D-7(i)	2/23/1998	7.65
D-7(i)	8/5/1998	5.96
D-7(i)	2/4/1999	3.10
D-7(i)	5/12/1999	2.27
D-7(i)	8/3/1999	0.82
D-7(i)	11/2/1999	1.35
D-7(i)	2/5/2000	1.10
D-7(i)	5/3/2000	2.01
D-7(i)	8/7/2000	1.27
D-7(i)	11/8/2000	1.06
D-7(i)	2/2/2001	-0.75
D-7(i)	5/4/2001	-0.10
D-7(i)	8/4/2001	1.74
D-7(i)	2/8/2002	2.11
D-7(i)	5/1/2002	5.77
D-7(i)	8/2/2002	1.50
D-7(i)	2/5/2003	4.61
D-7(i)	2/6/2004	2.95
D-7(i)	2/1/2005	0.80
D-7(i)	8/1/2005	1.38
D-7(i)	2/2/2006	12.18
D-7(i)	8/2/2006	4.18
D-7(i)	2/2/2007	4.38
D-7(i)	5/2/2007	6.04
D-7(i)	8/1/2007	3.47
D-7(i)	11/6/2007	2.71
D-7(i)	2/22/2008	7.18
D-7(i)	8/6/2008	5.00
D-7(i)	2/2/2009	9.44
D-7(i)	8/5/2009	8.85
D-7(i)	2/2/2010	10.56
D-7(i)	8/5/2010	10.29

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-7(i)	2/4/2011	10.44
D-7(i)	8/1/2011	11.60
D-7(i)	2/1/2012	12.15
D-7(i)	8/1/2012	11.75
D-7(i)	2/1/2013	12.93
D-7(i)	8/1/2013	10.99
D-7(i)	2/4/2014	14.15
D-7(i)	8/4/2014	13.16
D-7(i)	2/2/2015	13.03
D-7(i)	8/3/2015	11.45
D-7(i)	2/1/2016	14.21
D-7(i)	8/2/2016	12.55
D-8(i)	8/24/1988	11.42
D-8(i)	11/4/1988	11.22
D-8(i)	11/30/1988	12.08
D-8(i)	2/9/1989	11.88
D-8(i)	5/17/1989	10.95
D-8(i)	8/24/1989	10.30
D-8(i)	11/16/1989	9.44
D-8(i)	2/28/1990	10.24
D-8(i)	5/10/1990	9.71
D-8(i)	8/24/1990	8.65
D-8(i)	11/29/1990	9.39
D-8(i)	2/28/1991	10.22
D-8(i)	5/23/1991	10.03
D-8(i)	8/22/1991	8.47
D-8(i)	11/21/1991	9.28
D-8(i)	2/27/1992	10.05
D-8(i)	5/28/1992	8.80
D-8(i)	8/27/1992	8.56
D-8(i)	11/25/1992	9.05
D-8(i)	2/24/1993	8.27
D-8(i)	5/27/1993	9.27
D-8(i)	8/26/1993	8.56
D-8(i)	11/23/1993	7.75
D-8(i)	2/25/1994	10.53
D-8(i)	5/26/1994	8.57
D-8(i)	8/24/1994	9.30
D-8(i)	11/28/1994	9.67
D-8(i)	2/2/1995	11.60
D-8(i)	5/24/1995	9.82
D-8(i)	8/30/1995	5.73
D-8(i)	11/28/1995	7.48
D-8(i)	2/27/1996	11.59
D-8(i)	5/29/1996	7.76
D-8(i)	8/28/1996	7.40
D-8(i)	11/20/1996	8.29
D-8(i)	2/26/1997	8.37
D-8(i)	5/28/1997	6.89
D-8(i)	8/1/1997	8.11
D-8(i)	8/28/1997	7.37
D-8(i)	11/21/1997	6.73
D-8(i)	2/23/1998	8.03

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-8(i)	8/5/1998	6.29
D-8(i)	2/4/1999	3.37
D-8(i)	5/12/1999	2.48
D-8(i)	8/3/1999	0.89
D-8(i)	11/2/1999	1.56
D-8(i)	2/5/2000	1.29
D-8(i)	5/3/2000	1.75
D-8(i)	8/7/2000	0.95
D-8(i)	11/8/2000	0.77
D-8(i)	2/2/2001	-1.11
D-8(i)	5/4/2001	-0.43
D-8(i)	8/4/2001	1.52
D-8(i)	2/8/2002	1.86
D-8(i)	5/1/2002	5.53
D-8(i)	8/2/2002	1.20
D-8(i)	2/5/2003	4.45
D-8(i)	2/6/2004	2.81
D-8(i)	2/1/2005	0.62
D-8(i)	8/1/2005	1.27
D-8(i)	2/2/2006	7.06
D-8(i)	8/2/2006	3.96
D-8(i)	2/2/2007	4.16
D-8(i)	5/2/2007	5.86
D-8(i)	8/1/2007	3.23
D-8(i)	11/6/2007	2.60
D-8(i)	2/22/2008	7.00
D-8(i)	8/6/2008	4.75
D-8(i)	2/2/2009	9.03
D-8(i)	8/5/2009	8.68
D-8(i)	2/2/2010	10.24
D-8(i)	8/5/2010	9.90
D-8(i)	2/4/2011	9.88
D-8(i)	8/1/2011	11.18
D-8(i)	2/1/2012	11.68
D-8(i)	8/1/2012	11.27
D-8(i)	2/1/2013	12.51
D-8(i)	8/1/2013	10.60
D-8(i)	2/4/2014	10.98
D-8(i)	8/4/2014	12.85
D-8(i)	2/2/2015	12.78
D-8(i)	8/3/2015	10.82
D-8(i)	2/1/2016	13.59
D-8(i)	8/2/2016	11.94
D-11(i)	5/17/1989	13.06
D-11(i)	8/24/1989	11.76
D-11(i)	11/16/1989	10.87
D-11(i)	2/28/1990	12.43
D-11(i)	5/10/1990	11.34
D-11(i)	8/24/1990	10.08
D-11(i)	11/29/1990	10.62
D-11(i)	2/28/1991	12.45
D-11(i)	5/23/1991	12.42
D-11(i)	8/22/1991	9.84

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-11(i)	11/21/1991	10.40
D-11(i)	2/27/1992	12.20
D-11(i)	5/28/1992	10.25
D-11(i)	8/27/1992	9.89
D-11(i)	11/25/1992	10.33
D-11(i)	2/24/1993	9.77
D-11(i)	5/27/1993	10.87
D-11(i)	8/26/1993	9.99
D-11(i)	11/23/1993	9.06
D-11(i)	2/25/1994	13.12
D-11(i)	5/26/1994	10.13
D-11(i)	8/24/1994	9.53
D-11(i)	11/28/1994	11.46
D-11(i)	2/2/1995	14.87
D-11(i)	5/24/1995	11.60
D-11(i)	8/30/1995	6.24
D-11(i)	11/28/1995	8.58
D-11(i)	2/27/1996	16.50
D-11(i)	5/29/1996	9.78
D-11(i)	8/28/1996	8.38
D-11(i)	11/20/1996	10.39
D-11(i)	2/26/1997	10.86
D-11(i)	5/28/1997	7.84
D-11(i)	8/29/1997	8.26
D-11(i)	11/21/1997	7.40
D-11(i)	2/23/1998	10.73
D-11(i)	8/5/1998	6.99
D-11(i)	2/4/1999	5.57
D-11(i)	5/12/1999	2.79
D-11(i)	8/3/1999	1.54
D-11(i)	11/2/1999	0.57
D-11(i)	2/5/2000	2.50
D-11(i)	5/3/2000	2.25
D-11(i)	8/7/2000	1.76
D-11(i)	11/8/2000	1.82
D-11(i)	2/2/2001	-0.19
D-11(i)	5/4/2001	0.54
D-11(i)	8/4/2001	2.15
D-11(i)	2/8/2002	3.25
D-11(i)	5/1/2002	6.51
D-11(i)	8/2/2002	1.94
D-11(i)	2/5/2003	7.22
D-11(i)	2/6/2004	4.37
D-11(i)	2/1/2005	1.52
D-11(i)	8/1/2005	2.14
D-11(i)	2/2/2006	11.11
D-11(i)	8/2/2006	4.14
D-11(i)	2/1/2007	4.99
D-11(i)	5/2/2007	6.80
D-11(i)	8/1/2007	3.77
D-11(i)	11/6/2007	4.11
D-11(i)	2/22/2008	9.66
D-11(i)	8/6/2008	1.99
D-11(i)	2/2/2009	10.06

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-11(i)	8/5/2009	9.47
D-11(i)	2/2/2010	11.80
D-11(i)	8/5/2010	10.94
D-11(i)	2/4/2011	12.42
D-11(i)	8/1/2011	12.57
D-11(i)	2/1/2012	14.74
D-11(i)	8/1/2012	12.67
D-11(i)	2/1/2013	16.68
D-11(i)	8/1/2013	12.24
D-11(i)	2/4/2014	18.35
D-11(i)	8/4/2014	14.01
D-11(i)	2/2/2015	14.41
D-11(i)	8/3/2015	13.01
D-11(i)	2/1/2016	17.34
D-11(i)	8/2/2016	13.50
D-12(i)	2/28/1990	10.30
D-12(i)	5/10/1990	9.76
D-12(i)	8/24/1990	8.69
D-12(i)	11/29/1990	9.43
D-12(i)	2/28/1991	10.84
D-12(i)	5/23/1991	10.20
D-12(i)	11/21/1991	9.33
D-12(i)	2/27/1992	10.24
D-12(i)	5/28/1992	8.84
D-12(i)	8/27/1992	8.62
D-12(i)	11/25/1992	9.11
D-12(i)	2/24/1993	8.31
D-12(i)	5/27/1993	9.32
D-12(i)	8/26/1993	8.62
D-12(i)	11/23/1993	7.79
D-12(i)	2/25/1994	10.74
D-12(i)	5/26/1994	8.68
D-12(i)	8/24/1994	8.27
D-12(i)	11/28/1994	9.73
D-12(i)	2/2/1995	11.65
D-12(i)	5/24/1995	9.86
D-12(i)	8/30/1995	5.49
D-12(i)	11/28/1995	7.29
D-12(i)	2/27/1996	11.81
D-12(i)	5/29/1996	7.62
D-12(i)	8/28/1996	7.23
D-12(i)	11/20/1996	8.16
D-12(i)	2/26/1997	8.29
D-12(i)	5/28/1997	6.54
D-12(i)	8/29/1997	7.18
D-12(i)	11/21/1997	6.54
D-12(i)	2/23/1998	7.93
D-12(i)	8/5/1998	6.02
D-12(i)	2/4/1999	2.94
D-12(i)	5/12/1999	1.92
D-12(i)	8/3/1999	0.32
D-12(i)	11/2/1999	0.07
D-12(i)	2/5/2000	0.81

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-12(i)	5/3/2000	1.21
D-12(i)	8/7/2000	0.42
D-12(i)	11/8/2000	0.74
D-12(i)	2/2/2001	-1.68
D-12(i)	5/4/2001	-1.08
D-12(i)	8/4/2001	1.44
D-12(i)	2/8/2002	1.30
D-12(i)	5/1/2002	5.41
D-12(i)	8/2/2002	0.63
D-12(i)	2/5/2003	4.08
D-12(i)	2/6/2004	2.49
D-12(i)	2/1/2005	0.23
D-12(i)	8/1/2005	0.88
D-12(i)	2/2/2006	6.92
D-12(i)	8/2/2006	3.56
D-12(i)	2/1/2007	3.79
D-12(i)	5/2/2007	5.25
D-12(i)	8/1/2007	2.88
D-12(i)	11/6/2007	2.42
D-12(i)	2/22/2008	6.68
D-12(i)	8/6/2008	4.38
D-12(i)	2/2/2009	8.72
D-12(i)	8/5/2009	8.74
D-12(i)	2/2/2010	9.85
D-12(i)	8/5/2010	9.55
D-12(i)	2/4/2011	9.55
D-12(i)	8/1/2011	10.80
D-12(i)	2/1/2012	11.72
D-12(i)	8/1/2012	11.03
D-12(i)	2/1/2013	12.34
D-12(i)	8/1/2013	10.38
D-12(i)	2/4/2014	10.87
D-12(i)	8/4/2014	12.81
D-12(i)	2/2/2015	12.38
D-12(i)	8/3/2015	10.96
D-12(i)	2/1/2016	13.49
D-12(i)	8/2/2016	11.77
D-13(i)	11/21/1991	9.69
D-13(i)	2/27/1992	10.53
D-13(i)	5/28/1992	9.19
D-13(i)	8/27/1992	8.93
D-13(i)	11/25/1992	9.52
D-13(i)	2/24/1993	8.87
D-13(i)	5/27/1993	9.89
D-13(i)	8/26/1993	8.96
D-13(i)	11/23/1993	8.13
D-13(i)	2/25/1994	10.83
D-13(i)	5/26/1994	9.16
D-13(i)	8/24/1994	8.66
D-13(i)	11/28/1994	10.10
D-13(i)	2/2/1995	11.89
D-13(i)	5/24/1995	10.51
D-13(i)	8/30/1995	8.11

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
D-13(i)	11/28/1995	10.11
D-13(i)	2/27/1996	12.06
D-13(i)	5/29/1996	10.35
D-13(i)	8/28/1996	9.56
D-13(i)	11/20/1996	10.92
D-13(i)	2/26/1997	10.73
D-13(i)	5/28/1997	10.14
D-13(i)	8/1/1997	10.16
D-13(i)	8/28/1997	9.75
D-13(i)	11/21/1997	9.50
D-13(i)	2/23/1998	10.74
D-13(i)	8/5/1998	9.13
D-13(i)	2/4/1999	6.52
D-13(i)	5/12/1999	6.90
D-13(i)	8/3/1999	5.31
D-13(i)	11/2/1999	6.87
D-13(i)	2/5/2000	8.45
D-13(i)	5/3/2000	8.41
D-13(i)	8/7/2000	7.10
D-13(i)	11/8/2000	5.88
D-13(i)	2/2/2001	5.25
D-13(i)	5/4/2001	5.97
D-13(i)	8/4/2001	5.71
D-13(i)	2/8/2002	7.90
D-13(i)	5/1/2002	9.20
D-13(i)	8/2/2002	6.79
D-13(i)	2/5/2003	9.43
D-13(i)	2/6/2004	8.27
D-13(i)	2/1/2005	6.20
D-13(i)	8/1/2005	6.40
D-13(i)	2/2/2006	11.53
D-13(i)	8/2/2006	8.73
D-13(i)	2/2/2007	9.08
D-13(i)	5/2/2007	10.53
D-13(i)	8/1/2007	7.82
D-13(i)	11/6/2007	-17.36
D-13(i)	2/22/2008	11.56
D-13(i)	8/7/2008	7.06
D-13(i)	2/3/2009	12.51
D-13(i)	8/5/2009	11.91
D-13(i)	2/2/2010	11.95
D-13(i)	8/5/2010	13.32
D-13(i)	8/1/2011	13.73
E-2	2/2/2000	-9.66
E-2	8/7/2000	-2.47
E-2	8/4/2001	-3.52
E-2	2/13/2002	-4.21
E-2	5/1/2002	-0.22
E-2	8/2/2002	-3.21
E-2	11/8/2002	-4.39
E-2	2/5/2003	-0.34
E-2	5/7/2003	-1.37
E-2	2/6/2004	-6.03

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-2	5/10/2004	-6.22
E-2	8/2/2004	-7.55
E-2	11/13/2004	-8.43
E-2	5/2/2005	-7.35
E-2	8/1/2005	-7.07
E-2	11/1/2005	-4.39
E-2	2/1/2006	-0.14
E-2	5/8/2006	-0.84
E-2	5/30/2006	-0.93
E-2	8/2/2006	-1.80
E-2	11/9/2006	-4.56
E-2	2/1/2007	-1.90
E-2	5/3/2007	-1.89
E-2	8/1/2007	-2.93
E-2	11/6/2007	-6.70
E-2	2/22/2008	2.18
E-2	5/2/2008	55.98
E-2	8/6/2008	1.92
E-2	11/17/2008	11.06
E-2	2/18/2009	19.94
E-2	5/4/2009	3.02
E-2	8/3/2009	-0.86
E-2	11/2/2009	-0.83
E-2	2/2/2010	-5.68
E-2	5/4/2010	-15.04
E-2	8/2/2010	-5.72
E-2	11/8/2010	-2.72
E-2	2/4/2011	-5.56
E-2	5/2/2011	-1.49
E-2	8/1/2011	6.34
E-2	2/1/2012	16.07
E-2	5/2/2012	20.05
E-2	8/1/2012	26.49
E-2	11/1/2012	24.20
E-2	2/1/2013	29.66
E-2	5/1/2013	28.27
E-2	8/1/2013	19.17
E-2	11/6/2013	21.83
E-2	2/4/2014	24.13
E-2	5/2/2014	26.30
E-2	8/4/2014	22.14
E-2	11/3/2014	13.94
E-2	2/2/2015	22.46
E-2	5/1/2015	22.58
E-2	8/3/2015	27.64
E-2	11/2/2015	26.28
E-2	5/3/2016	30.97
E-2	8/2/2016	29.32
E-2	11/3/2016	28.55
E-3	2/2/2000	-27.67
E-3	8/7/2000	-30.64
E-3	8/4/2001	-35.92
E-3	2/13/2002	-4.79

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-3	5/1/2002	-1.89
E-3	8/2/2002	-28.68
E-3	11/8/2002	-35.64
E-3	2/5/2003	-10.33
E-3	5/7/2003	-4.94
E-3	2/6/2004	-12.30
E-3	5/10/2004	-15.32
E-3	8/2/2004	-14.67
E-3	11/13/2004	-11.04
E-3	5/2/2005	-15.49
E-3	8/1/2005	-15.14
E-3	11/1/2005	-16.90
E-3	2/1/2006	-6.65
E-3	5/8/2006	-7.90
E-3	5/30/2006	-8.07
E-3	8/2/2006	-8.97
E-3	11/9/2006	-20.08
E-3	2/1/2007	-10.09
E-3	5/3/2007	-9.52
E-3	8/1/2007	-10.92
E-3	11/6/2007	-8.20
E-3	2/22/2008	-7.50
E-3	5/2/2008	-6.75
E-3	8/6/2008	-8.55
E-3	11/17/2008	2.14
E-3	2/18/2009	5.13
E-3	5/4/2009	3.28
E-3	8/3/2009	2.05
E-3	11/2/2009	1.35
E-3	2/2/2010	4.80
E-3	5/4/2010	3.83
E-3	8/2/2010	0.12
E-3	11/8/2010	-4.55
E-3	2/4/2011	3.42
E-3	5/2/2011	7.66
E-3	8/1/2011	5.05
E-3	2/1/2012	18.68
E-3	5/2/2012	14.09
E-3	8/1/2012	11.69
E-3	11/1/2012	8.30
E-3	2/1/2013	12.56
E-3	5/1/2013	18.81
E-3	8/1/2013	17.90
E-3	11/6/2013	11.96
E-3	2/4/2014	19.16
E-3	5/2/2014	21.51
E-3	8/4/2014	16.75
E-3	11/3/2014	12.91
E-3	2/2/2015	16.96
E-3	5/1/2015	17.17
E-3	8/3/2015	22.11
E-3	11/2/2015	22.05
E-3	2/1/2016	25.01
E-3	5/3/2016	25.29

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-3	8/2/2016	21.27
E-3	11/3/2016	20.51
E-4	2/2/2000	-3.99
E-4	8/7/2000	-7.48
E-4	8/4/2001	-4.64
E-4	2/13/2002	-5.88
E-4	5/1/2002	-1.74
E-4	8/2/2002	-14.12
E-4	11/8/2002	-15.09
E-4	2/5/2003	-11.49
E-4	5/7/2003	-1.70
E-4	2/6/2004	-6.90
E-4	5/10/2004	-7.69
E-4	8/2/2004	-10.87
E-4	11/13/2004	-12.93
E-4	5/2/2005	-11.12
E-4	8/1/2005	-9.69
E-4	11/1/2005	-12.20
E-4	2/1/2006	-2.92
E-4	5/8/2006	-2.65
E-4	5/30/2006	-2.97
E-4	8/2/2006	-4.51
E-4	11/9/2006	-13.10
E-4	2/1/2007	-5.72
E-4	5/3/2007	-3.75
E-4	8/1/2007	-6.47
E-4	11/6/2007	-8.89
E-4	2/22/2008	-1.71
E-4	5/2/2008	-1.67
E-4	8/6/2008	-3.87
E-4	11/17/2008	4.98
E-4	2/18/2009	9.19
E-4	5/4/2009	7.57
E-4	8/3/2009	4.79
E-4	11/2/2009	3.23
E-4	2/2/2010	2.65
E-4	5/4/2010	0.67
E-4	8/2/2010	5.19
E-4	11/8/2010	2.36
E-4	2/4/2011	9.19
E-4	5/2/2011	11.37
E-4	8/1/2011	9.71
E-4	2/1/2012	8.16
E-4	5/2/2012	14.42
E-4	8/1/2012	12.63
E-4	11/1/2012	12.91
E-4	2/1/2013	19.39
E-4	5/1/2013	15.08
E-4	8/1/2013	13.98
E-4	11/6/2013	12.61
E-4	2/4/2014	13.65
E-4	5/2/2014	15.91
E-4	8/4/2014	15.32

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-4	11/3/2014	13.81
E-4	2/2/2015	16.24
E-4	5/1/2015	16.62
E-4	8/3/2015	15.80
E-4	11/2/2015	14.27
E-4	2/1/2016	18.78
E-4	5/3/2016	-21.58
E-4	8/2/2016	14.77
E-4	11/3/2016	13.40
E-12	2/2/2000	-30.40
E-12	8/7/2000	-22.62
E-12	8/4/2001	-21.70
E-12	2/13/2002	-18.94
E-12	5/1/2002	-14.79
E-12	8/2/2002	-20.23
E-12	11/8/2002	-25.28
E-12	2/5/2003	-29.53
E-12	5/7/2003	-28.67
E-12	2/6/2004	-27.96
E-12	5/10/2004	-27.50
E-12	8/2/2004	-27.20
E-12	11/13/2004	-29.18
E-12	5/2/2005	-27.39
E-12	8/1/2005	-27.86
E-12	11/1/2005	-29.23
E-12	2/1/2006	-27.39
E-12	5/8/2006	-25.32
E-12	5/30/2006	-25.44
E-12	8/2/2006	-24.54
E-12	11/9/2006	-27.32
E-12	2/1/2007	-24.12
E-12	5/3/2007	-23.06
E-12	8/1/2007	-24.76
E-12	11/6/2007	-27.35
E-12	2/22/2008	-24.65
E-12	5/2/2008	-24.75
E-12	8/6/2008	-25.15
E-12	11/17/2008	10.82
E-12	2/18/2009	10.83
E-12	5/4/2009	11.28
E-12	8/3/2009	-18.46
E-12	11/2/2009	-8.71
E-12	2/2/2010	-15.57
E-12	5/4/2010	-16.02
E-12	8/2/2010	-17.86
E-12	11/8/2010	-8.86
E-12	2/4/2011	-10.59
E-12	5/2/2011	-5.61
E-12	8/1/2011	-12.66
E-12	2/1/2012	-16.66
E-12	5/2/2012	-14.77
E-12	8/1/2012	-10.05
E-12	11/1/2012	-16.27

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-12	2/1/2013	-20.30
E-12	5/1/2013	-22.47
E-12	8/1/2013	-14.55
E-12	11/6/2013	-16.16
E-12	2/4/2014	-13.10
E-12	5/2/2014	-8.53
E-12	8/4/2014	-14.96
E-12	11/3/2014	16.44
E-12	2/2/2015	11.66
E-12	5/1/2015	-12.10
E-12	8/3/2015	-15.43
E-12	11/2/2015	6.67
E-12	2/1/2016	21.50
E-12	5/3/2016	-8.70
E-12	8/2/2016	-9.56
E-12	11/3/2016	-7.52
E-13	2/4/1999	-19.12
E-13	5/12/1999	-18.44
E-13	2/2/2000	-21.13
E-13	8/7/2000	-20.42
E-13	8/4/2001	0.61
E-13	2/13/2002	-19.26
E-13	5/1/2002	4.63
E-13	8/2/2002	-21.14
E-13	11/8/2002	-21.05
E-13	2/5/2003	-16.86
E-13	5/7/2003	-18.61
E-13	2/6/2004	-18.09
E-13	5/10/2004	-21.17
E-13	8/2/2004	-20.53
E-13	11/13/2004	-20.76
E-13	5/2/2005	-20.07
E-13	8/1/2005	-20.69
E-13	11/1/2005	-21.28
E-13	2/1/2006	-13.71
E-13	5/8/2006	-19.44
E-13	5/30/2006	-20.34
E-13	8/2/2006	-20.76
E-13	11/9/2006	-18.63
E-13	2/1/2007	-20.64
E-13	5/3/2007	-21.26
E-13	8/1/2007	-20.31
E-13	11/6/2007	-17.05
E-13	2/22/2008	-16.67
E-13	5/2/2008	-12.28
E-13	8/6/2008	-19.16
E-13	11/17/2008	-18.08
E-13	2/18/2009	-6.09
E-13	5/4/2009	-8.36
E-13	8/3/2009	-10.78
E-13	11/2/2009	-13.16
E-13	2/2/2010	-11.72
E-13	5/4/2010	-10.78

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
E-13	8/2/2010	-15.50
E-13	11/8/2010	-14.67
E-13	2/4/2011	-17.70
E-13	5/2/2011	-18.27
E-13	8/1/2011	-1.02
E-13	2/1/2012	-2.86
E-13	5/2/2012	-3.40
E-13	8/1/2012	-4.10
E-13	11/1/2012	-6.27
E-13	2/1/2013	-5.24
E-13	5/1/2013	-6.85
E-13	8/1/2013	-7.74
E-13	11/6/2013	-8.74
E-13	2/4/2014	-8.77
E-13	5/2/2014	-8.00
E-13	8/4/2014	0.02
E-13	11/3/2014	9.33
E-13	2/2/2015	9.51
E-13	5/1/2015	11.08
E-13	8/3/2015	5.13
E-13	11/2/2015	-0.58
E-13	2/1/2016	2.98
E-13	5/3/2016	-7.23
E-13	8/2/2016	-6.92
E-13	11/3/2016	-5.71
Former Vapor Degreaser Source Area Wells		
BOP-72(i)	8/5/2010	34.26
BOP-72(i)	11/10/2010	33.11
BOP-72(i)	2/4/2011	38.54
BOP-72(i)	8/1/2011	39.34
BOP-72(i)	2/1/2012	40.45
BOP-72(i)	5/2/2012	41.01
BOP-72(i)	8/1/2012	39.74
BOP-72(i)	11/1/2012	42.71
BOP-72(i)	2/1/2013	41.57
BOP-72(i)	8/1/2013	39.39
BOP-72(i)	11/6/2013	36.53
BOP-72(i)	2/4/2014	36.18
BOP-72(i)	5/2/2014	39.41
BOP-72(i)	8/4/2014	37.04
BOP-72(i)	11/3/2014	37.93
BOP-72(i)	2/2/2015	38.41
BOP-72(i)	5/1/2015	44.48
BOP-72(i)	8/3/2015	39.36
BOP-72(i)	11/2/2015	38.53
BOP-72(i)	2/1/2016	41.59
BOP-72(i)	5/2/2016	41.91
BOP-72(i)	8/2/2016	40.64
BOP-72(i)	11/4/2016	39.85
BOP-73(i)	8/5/2010	34.21
BOP-73(i)	11/10/2010	32.89
BOP-73(i)	2/4/2011	37.20

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Location	Sample Date	Groundwater Elevation (ft)
BOP-73(i)	8/1/2011	38.86
BOP-73(i)	2/1/2012	39.53
BOP-73(i)	5/2/2012	40.08
BOP-73(i)	8/1/2012	38.77
BOP-73(i)	11/1/2012	40.29
BOP-73(i)	2/1/2013	40.48
BOP-73(i)	8/1/2013	38.13
BOP-73(i)	11/6/2013	35.43
BOP-73(i)	2/4/2014	36.06
BOP-73(i)	5/2/2014	36.03
BOP-73(i)	8/4/2014	35.77
BOP-73(i)	11/3/2014	36.60
BOP-73(i)	2/2/2015	37.02
BOP-73(i)	5/1/2015	37.73
BOP-73(i)	8/3/2015	37.49
BOP-73(i)	11/2/2015	36.48
BOP-73(i)	2/1/2016	39.95
BOP-73(i)	5/2/2016	40.22
BOP-73(i)	8/2/2016	38.80
BOP-73(i)	11/4/2016	38.35
BOP-74(i)	8/5/2010	34.26
BOP-74(i)	11/10/2010	33.08
BOP-74(i)	2/4/2011	37.69
BOP-74(i)	8/1/2011	39.38
BOP-74(i)	2/1/2012	39.97
BOP-74(i)	5/2/2012	40.32
BOP-74(i)	8/1/2012	39.28
BOP-74(i)	11/1/2012	40.47
BOP-74(i)	2/1/2013	40.83
BOP-74(i)	8/1/2013	38.26
BOP-74(i)	11/6/2013	35.80
BOP-74(i)	2/4/2014	35.03
BOP-74(i)	5/2/2014	37.45
BOP-74(i)	8/4/2014	31.89
BOP-74(i)	11/3/2014	34.14
BOP-74(i)	2/2/2015	33.76
BOP-74(i)	5/1/2015	34.11
BOP-74(i)	8/3/2015	21.78
BOP-74(i)	11/2/2015	23.87
BOP-74(i)	2/1/2016	27.84
BOP-74(i)	5/2/2016	28.79
BOP-74(i)	8/3/2016	25.82
BOP-74(i)	11/4/2016	28.21
BOP-75(i)	2/4/2011	37.60
BOP-75(i)	8/1/2011	39.43
BOP-75(i)	2/1/2012	40.03
BOP-75(i)	5/2/2012	40.77
BOP-75(i)	8/1/2012	39.56
BOP-75(i)	11/1/2012	40.92
BOP-75(i)	2/1/2013	41.35
BOP-75(i)	8/1/2013	40.16
BOP-75(i)	11/6/2013	37.24

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Location	Sample Date	Groundwater Elevation (ft)
BOP-75(i)	2/4/2014	36.80
BOP-75(i)	5/2/2014	37.55
BOP-75(i)	8/4/2014	38.09
BOP-75(i)	11/3/2014	39.43
BOP-75(i)	2/2/2015	39.38
BOP-75(i)	5/1/2015	49.29
BOP-75(i)	8/3/2015	40.20
BOP-75(i)	11/2/2015	40.15
BOP-75(i)	2/1/2016	42.26
BOP-75(i)	5/2/2016	43.10
BOP-75(i)	8/2/2016	41.80
BOP-75(i)	11/4/2016	40.90
BOP-76(i)	2/4/2011	37.97
BOP-76(i)	8/1/2011	38.86
BOP-76(i)	2/1/2012	40.23
BOP-76(i)	5/2/2012	40.50
BOP-76(i)	8/1/2012	39.52
BOP-76(i)	11/1/2012	41.06
BOP-76(i)	2/1/2013	41.10
BOP-76(i)	8/1/2013	39.38
BOP-76(i)	11/6/2013	36.76
BOP-76(i)	2/4/2014	37.12
BOP-76(i)	5/2/2014	37.04
BOP-76(i)	8/4/2014	36.46
BOP-76(i)	11/3/2014	38.74
BOP-76(i)	2/2/2015	39.00
BOP-76(i)	5/1/2015	39.45
BOP-76(i)	8/3/2015	39.27
BOP-76(i)	11/2/2015	39.12
BOP-76(i)	2/1/2016	42.10
BOP-76(i)	5/2/2016	42.16
BOP-76(i)	8/2/2016	40.63
BOP-76(i)	11/4/2016	40.37
BOP-77(i)	2/4/2011	37.26
BOP-77(i)	8/1/2011	38.88
BOP-77(i)	2/1/2012	39.49
BOP-77(i)	5/2/2012	39.77
BOP-77(i)	8/1/2012	38.60
BOP-77(i)	11/1/2012	39.96
BOP-77(i)	2/1/2013	40.22
BOP-77(i)	5/1/2013	38.34
BOP-77(i)	8/1/2013	37.67
BOP-77(i)	11/6/2013	35.19
BOP-77(i)	2/4/2014	36.00
BOP-77(i)	5/2/2014	38.40
BOP-77(i)	8/4/2014	36.07
BOP-77(i)	11/3/2014	35.07
BOP-77(i)	2/2/2015	35.46
BOP-77(i)	5/1/2015	35.75
BOP-77(i)	8/3/2015	35.87
BOP-77(i)	11/2/2015	34.73
BOP-77(i)	2/1/2016	36.97

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Location	Sample Date	Groundwater Elevation (ft)
BOP-77(i)	5/2/2016	38.22
BOP-77(i)	8/3/2016	35.44
BOP-77(i)	11/4/2016	37.42
BOP-78(i)	2/1/2013	40.09
BOP-78(i)	5/1/2013	38.19
BOP-78(i)	8/1/2013	38.01
BOP-78(i)	11/6/2013	35.79
BOP-78(i)	2/4/2014	35.84
BOP-78(i)	5/2/2014	36.60
BOP-78(i)	8/4/2014	34.99
BOP-78(i)	11/3/2014	36.03
BOP-78(i)	2/2/2015	36.34
BOP-78(i)	5/1/2015	37.41
BOP-78(i)	8/3/2015	28.88
BOP-78(i)	11/2/2015	31.90
BOP-78(i)	2/1/2016	35.10
BOP-78(i)	5/2/2016	37.21
BOP-78(i)	8/3/2016	35.61
BOP-78(i)	11/4/2016	34.85
BOP-79(i)	2/1/2013	40.32
BOP-79(i)	5/1/2013	38.35
BOP-79(i)	8/1/2013	37.87
BOP-79(i)	11/6/2013	35.79
BOP-79(i)	2/4/2014	35.06
BOP-79(i)	5/2/2014	36.77
BOP-79(i)	8/4/2014	35.13
BOP-79(i)	11/3/2014	35.43
BOP-79(i)	2/2/2015	36.02
BOP-79(i)	5/1/2015	36.51
BOP-79(i)	8/3/2015	26.24
BOP-79(i)	11/2/2015	27.93
BOP-79(i)	2/1/2016	34.26
BOP-79(i)	5/2/2016	35.70
BOP-79(i)	8/3/2016	34.80
BOP-79(i)	11/4/2016	34.01
BOP-80(i)	2/1/2012	34.32
BOP-80(i)	5/2/2012	36.60
BOP-80(i)	8/1/2012	34.50
BOP-80(i)	11/1/2012	32.68
BOP-80(i)	2/1/2013	36.36
BOP-80(i)	5/1/2013	34.23
BOP-80(i)	8/1/2013	31.93
BOP-80(i)	11/6/2013	31.09
BOP-80(i)	2/4/2014	30.96
BOP-80(i)	5/2/2014	32.48
BOP-80(i)	8/4/2014	31.32
BOP-80(i)	11/3/2014	29.63
BOP-80(i)	2/2/2015	32.57
BOP-80(i)	5/1/2015	33.07
BOP-80(i)	8/3/2015	31.20
BOP-80(i)	11/2/2015	29.94

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HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-80(i)	2/1/2016	35.82
BOP-80(i)	5/2/2016	35.71
BOP-80(i)	8/2/2016	34.10
BOP-80(i)	11/4/2016	33.45
BOP-81(i)	2/1/2012	33.92
BOP-81(i)	5/2/2012	36.04
BOP-81(i)	8/1/2012	33.81
BOP-81(i)	11/1/2012	31.98
BOP-81(i)	2/1/2013	36.05
BOP-81(i)	5/1/2013	33.79
BOP-81(i)	8/1/2013	31.53
BOP-81(i)	11/6/2013	30.54
BOP-81(i)	2/4/2014	30.36
BOP-81(i)	5/2/2014	32.26
BOP-81(i)	8/4/2014	30.97
BOP-81(i)	11/3/2014	29.17
BOP-81(i)	2/2/2015	-7.71
BOP-81(i)	5/1/2015	32.77
BOP-81(i)	8/3/2015	30.82
BOP-81(i)	11/2/2015	29.28
BOP-81(i)	2/1/2016	35.58
BOP-81(i)	5/2/2016	35.28
BOP-81(i)	8/2/2016	33.37
BOP-81(i)	11/4/2016	32.75
BOP-82(i)	2/1/2012	29.64
BOP-82(i)	5/2/2012	32.20
BOP-82(i)	8/1/2012	29.59
BOP-82(i)	11/1/2012	27.34
BOP-82(i)	2/1/2013	31.53
BOP-82(i)	5/1/2013	29.62
BOP-82(i)	8/1/2013	27.58
BOP-82(i)	11/6/2013	26.26
BOP-82(i)	2/4/2014	27.00
BOP-82(i)	5/2/2014	28.77
BOP-82(i)	8/4/2014	27.42
BOP-82(i)	11/3/2014	24.55
BOP-82(i)	2/2/2015	28.66
BOP-82(i)	5/1/2015	29.72
BOP-82(i)	8/3/2015	27.05
BOP-82(i)	11/2/2015	24.90
BOP-82(i)	2/1/2016	31.57
BOP-82(i)	5/2/2016	31.56
BOP-82(i)	8/2/2016	29.42
BOP-82(i)	11/4/2016	28.90
BOP-83(i)	2/1/2012	29.27
BOP-83(i)	5/2/2012	31.67
BOP-83(i)	8/1/2012	29.21
BOP-83(i)	11/1/2012	27.22
BOP-83(i)	2/1/2013	31.36
BOP-83(i)	5/1/2013	29.22
BOP-83(i)	8/1/2013	27.36

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-83(i)	11/6/2013	24.31
BOP-83(i)	2/4/2014	26.51
BOP-83(i)	5/2/2014	27.78
BOP-83(i)	8/4/2014	27.27
BOP-83(i)	11/3/2014	25.74
BOP-83(i)	2/2/2015	28.34
BOP-83(i)	5/1/2015	29.13
BOP-83(i)	8/3/2015	27.41
BOP-83(i)	11/2/2015	25.37
BOP-83(i)	2/1/2016	31.06
BOP-83(i)	5/2/2016	31.48
BOP-83(i)	8/2/2016	28.84
BOP-83(i)	11/4/2016	27.90
BOP-84(i)	2/1/2012	39.81
BOP-84(i)	8/1/2012	39.01
BOP-84(i)	2/1/2013	40.57
BOP-84(i)	8/1/2013	37.94
BOP-84(i)	2/4/2014	34.80
BOP-84(i)	5/2/2014	35.81
BOP-84(i)	8/4/2014	31.73
BOP-84(i)	11/3/2014	30.97
BOP-84(i)	2/2/2015	32.25
BOP-84(i)	5/1/2015	30.29
BOP-84(i)	8/3/2015	25.42
BOP-84(i)	11/2/2015	21.32
BOP-84(i)	2/1/2016	25.63
BOP-84(i)	5/2/2016	26.52
BOP-84(i)	8/3/2016	24.74
BOP-84(i)	11/4/2016	23.27
BOP-85(i)	2/1/2012	39.81
BOP-85(i)	8/1/2012	39.29
BOP-85(i)	2/1/2013	41.50
BOP-85(i)	8/1/2013	40.06
BOP-85(i)	2/4/2014	37.56
BOP-85(i)	5/2/2014	38.12
BOP-85(i)	8/4/2014	37.09
BOP-85(i)	11/3/2014	38.73
BOP-85(i)	2/2/2015	39.57
BOP-85(i)	5/1/2015	40.53
BOP-85(i)	8/3/2015	31.97
BOP-85(i)	11/2/2015	31.04
BOP-85(i)	2/1/2016	33.33
BOP-85(i)	5/2/2016	35.31
BOP-85(i)	8/2/2016	34.47
BOP-85(i)	11/4/2016	33.07
BOP-86(i)	2/1/2012	39.67
BOP-86(i)	8/1/2012	39.19
BOP-86(i)	2/1/2013	41.21
BOP-86(i)	8/1/2013	41.09
BOP-86(i)	2/4/2014	36.49
BOP-86(i)	5/2/2014	37.06

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
BOP-86(i)	8/4/2014	35.90
BOP-86(i)	11/3/2014	35.59
BOP-86(i)	2/2/2015	36.53
BOP-86(i)	5/1/2015	43.55
BOP-86(i)	8/3/2015	27.99
BOP-86(i)	11/2/2015	26.32
BOP-86(i)	2/1/2016	30.14
BOP-86(i)	5/2/2016	32.96
BOP-86(i)	8/2/2016	28.89
BOP-86(i)	11/4/2016	31.30
BOP-87(i)	2/1/2012	39.79
BOP-87(i)	8/1/2012	39.26
BOP-87(i)	2/1/2013	41.51
BOP-87(i)	8/1/2013	40.01
BOP-87(i)	2/4/2014	37.78
BOP-87(i)	5/2/2014	38.55
BOP-87(i)	8/4/2014	36.76
BOP-87(i)	11/3/2014	39.33
BOP-87(i)	2/2/2015	39.20
BOP-87(i)	5/1/2015	39.83
BOP-87(i)	8/3/2015	30.38
BOP-87(i)	11/2/2015	26.83
BOP-87(i)	2/1/2016	31.63
BOP-87(i)	5/2/2016	31.58
BOP-87(i)	8/2/2016	30.70
BOP-87(i)	11/4/2016	29.92
BOP-88(i)	2/1/2012	39.77
BOP-88(i)	8/1/2012	39.28
BOP-88(i)	2/1/2013	41.37
BOP-88(i)	8/1/2013	39.82
BOP-88(i)	2/4/2014	37.47
BOP-88(i)	5/2/2014	38.04
BOP-88(i)	8/4/2014	36.67
BOP-88(i)	11/3/2014	37.40
BOP-88(i)	2/2/2015	38.57
BOP-88(i)	5/1/2015	38.69
BOP-88(i)	8/3/2015	28.57
BOP-88(i)	11/2/2015	27.13
BOP-88(i)	2/1/2016	23.13
BOP-88(i)	5/2/2016	26.29
BOP-88(i)	8/3/2016	30.33
BOP-88(i)	11/4/2016	30.82
Coolant Release Area Wells		
LAI-4	2/26/2007	88.50
LAI-4	5/10/2007	89.44
LAI-4	8/1/2007	88.45
LAI-4	11/6/2007	89.39
LAI-4	2/22/2008	88.48
LAI-4	5/14/2008	88.41
LAI-4	8/6/2008	87.69
LAI-4	11/3/2008	88.38

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
LAI-4	2/2/2009	88.40
LAI-4	5/4/2009	88.52
LAI-4	5/4/2010	88.41
LAI-4	8/5/2010	88.49
LAI-4	11/10/2010	88.47
LAI-4	2/4/2011	88.51
LAI-4	8/1/2011	88.58
LAI-4	2/1/2012	91.61
LAI-4	5/2/2012	91.96
LAI-4	8/1/2012	89.56
LAI-4	11/1/2012	94.75
LAI-4	2/1/2013	88.66
LAI-4	2/4/2014	93.66
LAI-4	8/4/2014	93.23
LAI-4	2/2/2015	95.54
LAI-4	8/3/2015	90.43
LAI-4	2/1/2016	90.33
LAI-4	8/2/2016	89.09
LAI-6	2/26/2007	89.15
LAI-6	5/10/2007	89.15
LAI-6	8/1/2007	89.01
LAI-6	11/6/2007	88.85
LAI-6	2/22/2008	89.07
LAI-6	5/14/2008	89.10
LAI-6	8/6/2008	88.60
LAI-6	11/3/2008	88.86
LAI-6	2/2/2009	89.07
LAI-6	5/4/2009	89.25
LAI-6	8/5/2009	89.03
LAI-6	11/2/2009	88.97
LAI-6	2/2/2010	89.24
LAI-6	5/4/2010	89.18
LAI-6	8/5/2010	89.22
LAI-6	11/10/2010	89.15
LAI-6	2/4/2011	89.19
LAI-6	8/1/2011	89.25
LAI-6	2/1/2012	110.65
LAI-6	5/2/2012	92.15
LAI-6	8/1/2012	89.75
LAI-6	11/1/2012	94.78
LAI-6	2/1/2013	89.16
LAI-6	8/4/2014	93.26
LAI-6	8/3/2015	90.74
LAI-6	8/2/2016	89.43
LAI-7	2/26/2007	85.41
LAI-7	5/10/2007	85.78
LAI-7	8/1/2007	85.54
LAI-7	11/6/2007	85.20
LAI-7	2/22/2008	85.68
LAI-7	5/13/2008	86.10
LAI-7	8/6/2008	85.58
LAI-7	11/3/2008	84.24

APPENDIX D-5
HISTORICAL GROUNDWATER ELEVATIONS THROUGH DECEMBER 2016
BOEING OF PORTLAND

Location	Sample Date	Groundwater Elevation (ft)
LAI-7	2/2/2009	85.68
LAI-7	5/4/2009	86.64
LAI-7	8/5/2009	85.52
LAI-7	11/2/2009	85.40
LAI-7	2/2/2010	87.47
LAI-7	5/4/2010	87.10
LAI-7	8/5/2010	86.74
LAI-7	11/10/2010	85.79
LAI-7	2/4/2011	86.92
LAI-7	8/1/2011	86.32
LAI-7	2/1/2012	83.58
LAI-7	5/2/2012	85.11
LAI-7	8/1/2012	82.27
LAI-7	11/1/2012	82.48
LAI-7	2/1/2013	82.69
LAI-7	2/4/2014	82.30
LAI-7	8/4/2014	83.92
LAI-7	2/2/2015	84.72
LAI-7	8/3/2015	83.96
LAI-7	2/1/2016	84.34
LAI-7	8/2/2016	82.73

ft = feet

APPENDIX E

Lab Data Reports/Validation Memos
January 1 through December 31, 2016

1Q16 TGA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Anne Halvorsen

DATE: March 15, 2016

RE: **Boeing Portland (TGA)**
First Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 43 groundwater samples, 4 field duplicates, 7 trip blanks, and 19 vapor samples collected during the first quarter 2016 TGA sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental (LLI), located in Lancaster, Pennsylvania, and Eurofins Air Toxics (Air Toxics) located in Folsom, California. This data quality evaluation covers LLI data packages 1628884, 1629320, 1629541, 1629542, 1629543, 1632274, and 1635540, and Air Toxics data package 1602135. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs], U.S. Environmental Protection Agency [EPA] Method SW8260C); conventional inorganic parameters including N-Nitrate, N-Nitrite, and sulfate (EPA Method 300.0); sulfide (EPA Method 376.1); total and dissolved iron (EPA Method 6010C); total phosphorous (EPA Method 365.1); N-Ammonia (Method SM 4500 NH3 D); total organic carbon (Method SM 5310 C-2000); oil and grease (EPA Method 1664A; diesel- and motor oil-range petroleum hydrocarbons (Oregon Department of Environmental Quality (ODEQ)-approved Method NWTPH-Dx); and methane, ethane, ethane, and acetylene (MEEA; Modified RSK 175). Samples submitted to Air Toxics were analyzed for VOCs (Method TO-15).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008) and the *National Functional Guidelines for Inorganic Data Review* (EPA 2004, 2010). The verification and validation check for each laboratory data package included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.

- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. Data qualifiers are summarized in Table 1.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition. All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperatures were recorded. The coolers were received with temperatures within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times. No qualification of the data as necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for analysis. No contamination was detected in the method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

Seven trip blanks were submitted to the laboratory for VOC analysis with the sample batches. No contamination was detected in the trip blanks. No qualification of the data was necessary. No field equipment blanks were submitted for analysis with these sample batches.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the organics analyses. Recovery values for the surrogate spikes were within the current laboratory-specified control limits, with the following exceptions:

- Recovery of the surrogate propene associated with the MEEA analysis of sample BOP-88i-0216 in data package 1629320 exceeded the laboratory-specified control limits; the associated detected concentrations were qualified as estimated (J), as indicated in Table 1.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

At least one MS and/or laboratory replicate sample were analyzed with the conventional parameters in data packages 1628884 and 1629543. MS/MSDs were analyzed with the MEEA analyses in data packages 1628884, 1629320, and 1635540. The recovery values for each required spiking compound and/or the relative percent differences (RPDs) between the laboratory replicate results were within the current project-specified and/or laboratory-specified control limits for all project samples with the following exceptions:

- The MS recoveries for SGT-HEM (TPH) and HEM (oil and grease) associated with the conventionals analysis of sample LAI-4-0216 in data package 1629543 were below the laboratory-specified control limit; the associated sample result was qualified as estimated (J, UJ), as indicated in Table 1.
- The MS/MSD recoveries for methane associated with the MEEA analysis of sample BOP-72i-0216 in data package 1628884 and sample E-16-0216 in data package 1635540 both exceeded and were below the laboratory-specified control limit. The original sample concentration was greater than four times the spike concentration; therefore, no qualification of the data was necessary.
- The MS recovery for ethene associated with the MEEA analysis of sample BOP-72i-0216 in data package 1628884 exceeded the laboratory-specified control limit. However, the corresponding MSD recovery was within control limits; therefore, no qualification of the data was necessary.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for analysis. Recoveries and relative percent differences (RPDs) for the laboratory control samples and associated duplicates were within the current laboratory-specified control limits, with the following exceptions:

- The LCS/LCSD recoveries of 2-hexanone and 4-methyl-2-pentanone associated with the VOC analyses in data packages 1629542 and 1629543 were below the laboratory-specified control limits; the associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The LCS/LCSD recoveries for SGT-HEM (TPH) associated with the conventionals analysis in data package 1629543 were below the laboratory-specified control limit; the associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The LCS/LCSD RPD for SGT-HEM (TPH) associated with the conventionals analysis in data package 1629543 exceeded the laboratory-specified control limit. SGT-HEM (TPH) was not detected in the associated samples; therefore, no qualification of the data was necessary.

Blind Field Duplicate Results

As specified in the QAPP, blind field duplicate samples were collected at a rate of one blind field duplicate sample per 20 samples, but not less than one blind field duplicate per sampling round. Four pairs of blind field duplicate water samples (TowerInf-0216/TowerInD-0216, TowerEff-0216/TowerEfD-0216, BOP-X-0216/BOP-07i-0216, and BOP-Y-0216/BOP-59i-0216) were submitted for analysis with data packages 1629320, 1629541, and 1629542.

A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for the duplicate sample pairs submitted for analysis were within the project-specified control limits, with the following exceptions:

- The RPDs for 2-butanone associated with the VOC analysis of sample pair BOP-Y-0216/BOP-59i-0216 in data package 1629542 exceeded the laboratory-specified control limit; the associated sample results were qualified as estimated (J), as indicated in Table 1.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where dilution was performed due to the presence of high level target species or sample matrix interference.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for these sample batches.

Initial and continuing calibration verification (CCV) recovery result summaries were provided as necessary with all data packages; recoveries were within laboratory-specified control limits for all samples, with the following exceptions:

- The laboratory indicated the CCV was high for a target AMEE analyte in data package 1628884. However, the associated samples did not contain detectable concentrations of the affected compound; therefore, no qualification of the data was necessary.
- The CCV was low for chloromethane in data package 1635540. The associated sample result was qualified as estimated (J, UJ), as indicated in Table 1.
- The CCV was low for several VOC compounds in data package 1632274. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.

The laboratory also noted the following issue:

- The initial VOC analysis of sample DP1-0216 in data package 1629542 had an autosampler error and no data was collected. The second analysis of the sample had an internal standard out of control limits high. The third analysis was from a vial with headspace, and had all

internal standards within control limits. The laboratory also noted there were no detectable concentrations of the compounds associated with the internal standard during any of the analyses. Results for the second analysis and its associated dilution should be reported; the reanalysis results should not be reported.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates, laboratory duplicates, matrix spike duplicates, and blind field duplicates. Data accuracy was evaluated through laboratory control samples, matrix spikes, and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



Kristi Schultz
Assistant Scientist



Anne Halvorsen
Senior Project Scientist

ASH/kes
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EPA. 2010. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1629320	Ethene	7.2	J	BOP-88i-0216	High surrogate recovery
1629542	2-Butanone	5.0 U	UJ	BOP-59i-0216	High field duplicate RPD
1629542	2-Butanone	20	J	BOP-Y-0216	High field duplicate RPD
1629542	2-Hexanone	5.0 U	UJ	DP1-0216	Low LCS/LCSD recovery
1629542	2-Hexanone	5.0 U	UJ	BOP-Y-0216	Low LCS/LCSD recovery
1629542	4-Methyl-2-pentanone	5.0 U	UJ	DP1-0216	Low LCS/LCSD recovery
1629542	4-Methyl-2-pentanone	5.0 U	UJ	BOP-Y-0216	Low LCS/LCSD recovery
1629542	ALL VOCs	ALL	DNR	DP1-0216 (RE)	Do not report - use second analysis and RE analysis results
1629543	2-Hexanone	5.0 U	UJ	LAI-4-0216	Low LCS/LCSD recovery
1629543	2-Hexanone	5.0 U	UJ	LAI-7-0216	Low LCS/LCSD recovery
1629543	4-Methyl-2-pentanone	5.0 U	UJ	LAI-4-0216	Low LCS/LCSD recovery
1629543	4-Methyl-2-pentanone	5.0 U	UJ	LAI-7-0216	Low LCS/LCSD recovery
1629543	SGT-HEM (TPH)	5.0 U	UJ	LAI-4-0216	Low LCS/LCSD recovery and Low MS recovery
1629543	HEM (Oil & Grease)	5.0 U	UJ	LAI-4-0216	Low MS recovery
1632274	2-Butanone	5.0 U	UJ	TowerInf-021616	Low continuing calibration recovery
1632274	2-Butanone	5.0 U	UJ	TowerEff-021616	Low continuing calibration recovery
1632274	4-Methyl-2-pentanone	5.0 U	UJ	TowerInf-021616	Low continuing calibration recovery
1632274	4-Methyl-2-pentanone	5.0 U	UJ	TowerEff-021616	Low continuing calibration recovery
1632274	2-Hexanone	5.0 U	UJ	TowerInf-021616	Low continuing calibration recovery
1632274	2-Hexanone	5.0 U	UJ	TowerEff-021616	Low continuing calibration recovery
1635540	Chloromethane	0.5 U	UJ	E-16-0216	Low continuing calibration recovery

DNR = Do not report

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

eurofins | Air Toxics

2/17/2016
Ms. Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue South

Edmonds WA 98020

Project Name: Boeing of Portland
Project #: 025116.116.412
Workorder #: 1602135

Dear Ms. Chris Kimmel

The following report includes the data for the above referenced project for sample(s) received on 2/5/2016 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1602135

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	02/05/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/17/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BOP-78i-0216	TO-15	3.7 "Hg	15.1 psi
02A	BOP-79i-0216	TO-15	4.1 "Hg	15 psi
03A	BOP-84i-0216	TO-15	4.9 "Hg	15.1 psi
04A	BOP-85i-0216	TO-15	4.1 "Hg	15 psi
05A	BOP-86i-0216	TO-15	3.1 "Hg	15 psi
06A	BOP-87i-0216	TO-15	3.9 "Hg	14.9 psi
07A	BOP-88i-0216	TO-15	3.7 "Hg	14.8 psi
08A	VOW-16-0216	TO-15	4.3 "Hg	15.4 psi
09A	VOW-17-0216	TO-15	3.9 "Hg	14.9 psi
10A	VOW-18-0216	TO-15	4.1 "Hg	15.4 psi
11A	VP-1-0216	TO-15	3.9 "Hg	15 psi
12A	VP-2-0216	TO-15	6.9 "Hg	14.8 psi
13A	VP-3-0216	TO-15	3.3 "Hg	15.2 psi
14A	VP-4-0216	TO-15	3.9 "Hg	14.9 psi
15A	VP-5-0216	TO-15	4.1 "Hg	15.6 psi
16A	VP-6-0216	TO-15	4.1 "Hg	14.9 psi
17A	VP-7-0216	TO-15	2.8 "Hg	14.9 psi
18A	VP-8-0216	TO-15	4.3 "Hg	14.8 psi
19A	VP-9-0216	TO-15	5.3 "Hg	15 psi
20A	Lab Blank	TO-15	NA	NA
20B	Lab Blank	TO-15	NA	NA
21A	CCV	TO-15	NA	NA
21B	CCV	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1602135

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	02/05/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/17/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
22A	LCS	TO-15	NA	NA
22AA	LCSD	TO-15	NA	NA
22B	LCS	TO-15	NA	NA
22BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/17/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 956
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Landau Associates, Inc.
Workorder# 1602135

Nineteen 1 Liter Summa Canister samples were received on February 05, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample BOP-79i-0216 due to the presence of high level non-target species.

Dilution was performed on samples VOW-17-0216, VP-2-0216, VP-5-0216, VP-7-0216, and VP-8-0216 due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: BOP-78i-0216

Lab ID#: 1602135-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	17	3.0	44
1,1-Dichloroethene	1.2	2.7	4.6	11
1,1,1-Trichloroethane	1.2	7.3	6.3	40
cis-1,2-Dichloroethene	1.2	28	4.6	110
Trichloroethene	1.2	120	6.2	620
Tetrachloroethene	1.2	30	7.8	200

Client Sample ID: BOP-79i-0216

Lab ID#: 1602135-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	12	29	30	73
Trichloroethene	12	32	63	170
Tetrachloroethene	12	16	79	110

Client Sample ID: BOP-84i-0216

Lab ID#: 1602135-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	1.2	3.1	3.2
1,1,1-Trichloroethane	1.2	4.2	6.6	23
cis-1,2-Dichloroethene	1.2	2.0	4.8	8.1
Trichloroethene	1.2	170	6.5	930
Tetrachloroethene	1.2	36	8.2	240

Client Sample ID: BOP-85i-0216

Lab ID#: 1602135-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	6.2	6.4	34
Trichloroethene	1.2	2.5	6.3	14
Tetrachloroethene	1.2	48	7.9	330

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: BOP-86i-0216

Lab ID#: 1602135-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	3.1	6.1	17
Trichloroethene	1.1	7.3	6.0	39
Tetrachloroethene	1.1	44	7.6	300

Client Sample ID: BOP-87i-0216

Lab ID#: 1602135-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.2	1.3	4.6	5.0
1,1,1-Trichloroethane	1.2	110	6.3	600
cis-1,2-Dichloroethene	1.2	2.0	4.6	7.9
Trichloroethene	1.2	27	6.2	150
Tetrachloroethene	1.2	35	7.8	230

Client Sample ID: BOP-88i-0216

Lab ID#: 1602135-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.1	1.6	4.5	6.3
1,1,1-Trichloroethane	1.1	56	6.2	300
Trichloroethene	1.1	15	6.2	80
Tetrachloroethene	1.1	21	7.8	140

Client Sample ID: VOW-16-0216

Lab ID#: 1602135-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	4.0	6.5	22
Trichloroethene	1.2	25	6.4	130
Tetrachloroethene	1.2	24	8.1	160

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VOW-17-0216

Lab ID#: 1602135-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.9	21	4.9	54
1,1-Dichloroethene	1.9	2.8	7.6	11
1,1,1-Trichloroethane	1.9	3.6	10	19
cis-1,2-Dichloroethene	1.9	40	7.6	160
Trichloroethene	1.9	480	10	2600
Tetrachloroethene	1.9	31	13	210

Client Sample ID: VOW-18-0216

Lab ID#: 1602135-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	36	6.5	200
cis-1,2-Dichloroethene	1.2	3.8	4.7	15
Trichloroethene	1.2	64	6.4	340
Tetrachloroethene	1.2	54	8.0	360

Client Sample ID: VP-1-0216

Lab ID#: 1602135-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	1.3	6.3	7.3
Trichloroethene	1.2	300	6.2	1600
Tetrachloroethene	1.2	15	7.9	99

Client Sample ID: VP-2-0216

Lab ID#: 1602135-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	160	28000	880	150000
Tetrachloroethene	160	330	1100	2300

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-3-0216

Lab ID#: 1602135-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	77	6.2	420
Trichloroethene	1.1	18	6.1	100
Tetrachloroethene	1.1	19	7.7	130

Client Sample ID: VP-4-0216

Lab ID#: 1602135-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	2.9	6.3	16
Trichloroethene	1.2	28	6.2	150
Tetrachloroethene	1.2	15	7.8	100

Client Sample ID: VP-5-0216

Lab ID#: 1602135-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	100	450	540	2500
Trichloroethene	100	17000	530	93000
Tetrachloroethene	100	250	670	1700

Client Sample ID: VP-6-0216

Lab ID#: 1602135-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	90	6.4	490
cis-1,2-Dichloroethene	1.2	3.8	4.6	15
Trichloroethene	1.2	93	6.3	500
Tetrachloroethene	1.2	28	7.9	190

Client Sample ID: VP-7-0216

Lab ID#: 1602135-17A

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-7-0216

Lab ID#: 1602135-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	2.8	30	11	120
1,1,1-Trichloroethane	2.8	850	15	4600
cis-1,2-Dichloroethene	2.8	31	11	120
Trichloroethene	2.8	74	15	400
Tetrachloroethene	2.8	23	19	150

Client Sample ID: VP-8-0216

Lab ID#: 1602135-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	7.8	120	31	460
1,1,1-Trichloroethane	7.8	2600	42	14000
cis-1,2-Dichloroethene	7.8	64	31	260
Trichloroethene	7.8	150	42	790
Tetrachloroethene	7.8	26	53	180

Client Sample ID: VP-9-0216

Lab ID#: 1602135-19A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	9.5	6.7	52
Trichloroethene	1.2	50	6.6	270
Tetrachloroethene	1.2	19	8.3	130

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Client Sample ID: BOP-78i-0216

Lab ID#: 1602135-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021110**	**Date of Collection: 2/2/16 10:45:00 AM**	
Dil. Factor:	**2.31**	**Date of Analysis: 2/11/16 03:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	17	3.0	44
1,1-Dichloroethene	1.2	2.7	4.6	11
1,1,1-Trichloroethane	1.2	7.3	6.3	40
cis-1,2-Dichloroethene	1.2	28	4.6	110
Trichloroethene	1.2	120	6.2	620
Tetrachloroethene	1.2	30	7.8	200

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: BOP-79i-0216

Lab ID#: 1602135-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021111**	**Date of Collection: 2/2/16 10:38:00 AM**	
Dil. Factor:	**23.4**	**Date of Analysis: 2/11/16 03:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	12	29	30	73
1,1-Dichloroethene	12	Not Detected	46	Not Detected
1,1,1-Trichloroethane	12	Not Detected	64	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	46	Not Detected
Trichloroethene	12	32	63	170
Tetrachloroethene	12	16	79	110

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: BOP-84i-0216

Lab ID#: 1602135-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021112**	**Date of Collection: 2/2/16 9:55:00 AM**	
Dil. Factor:	**2.42**	**Date of Analysis: 2/11/16 04:26 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	1.2	3.1	3.2
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	4.2	6.6	23
cis-1,2-Dichloroethene	1.2	2.0	4.8	8.1
Trichloroethene	1.2	170	6.5	930
Tetrachloroethene	1.2	36	8.2	240

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: BOP-85i-0216

Lab ID#: 1602135-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021113**	**Date of Collection: 2/2/16 11:11:00 AM**	
Dil. Factor:	**2.34**	**Date of Analysis: 2/11/16 04:52 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	6.2	6.4	34
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	2.5	6.3	14
Tetrachloroethene	1.2	48	7.9	330

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: BOP-86i-0216

Lab ID#: 1602135-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021114**	**Date of Collection: 2/2/16 9:10:00 AM**	
Dil. Factor:	**2.25**	**Date of Analysis: 2/11/16 05:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	3.1	6.1	17
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	7.3	6.0	39
Tetrachloroethene	1.1	44	7.6	300

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: BOP-87i-0216

Lab ID#: 1602135-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021115**	**Date of Collection: 2/2/16 11:00:00 AM**	
Dil. Factor:	**2.31**	**Date of Analysis: 2/11/16 05:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	1.3	4.6	5.0
1,1,1-Trichloroethane	1.2	110	6.3	600
cis-1,2-Dichloroethene	1.2	2.0	4.6	7.9
Trichloroethene	1.2	27	6.2	150
Tetrachloroethene	1.2	35	7.8	230

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: BOP-88i-0216

Lab ID#: 1602135-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021116**	**Date of Collection: 2/2/16 10:55:00 AM**	
Dil. Factor:	**2.29**	**Date of Analysis: 2/11/16 06:11 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	1.6	4.5	6.3
1,1,1-Trichloroethane	1.1	56	6.2	300
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	15	6.2	80
Tetrachloroethene	1.1	21	7.8	140

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: VOW-16-0216

Lab ID#: 1602135-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021117**	**Date of Collection: 2/2/16 10:32:00 AM**	
Dil. Factor:	**2.39**	**Date of Analysis: 2/11/16 06:38 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
1,1,1-Trichloroethane	1.2	4.0	6.5	22
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Trichloroethene	1.2	25	6.4	130
Tetrachloroethene	1.2	24	8.1	160

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: VOW-17-0216

Lab ID#: 1602135-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021118**	**Date of Collection: 2/2/16 10:08:00 AM**	
Dil. Factor:	**3.86**	**Date of Analysis: 2/11/16 07:05 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.9	21	4.9	54
1,1-Dichloroethene	1.9	2.8	7.6	11
1,1,1-Trichloroethane	1.9	3.6	10	19
cis-1,2-Dichloroethene	1.9	40	7.6	160
Trichloroethene	1.9	480	10	2600
Tetrachloroethene	1.9	31	13	210

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: VOW-18-0216

Lab ID#: 1602135-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021119**	**Date of Collection: 2/2/16 8:55:00 AM**	
Dil. Factor:	**2.37**	**Date of Analysis: 2/11/16 07:31 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
1,1,1-Trichloroethane	1.2	36	6.5	200
cis-1,2-Dichloroethene	1.2	3.8	4.7	15
Trichloroethene	1.2	64	6.4	340
Tetrachloroethene	1.2	54	8.0	360

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: VP-1-0216

Lab ID#: 1602135-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021121**	**Date of Collection: 2/2/16 10:15:00 AM**	
Dil. Factor:	**2.32**	**Date of Analysis: 2/11/16 11:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	1.3	6.3	7.3
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	300	6.2	1600
Tetrachloroethene	1.2	15	7.9	99

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: VP-2-0216

Lab ID#: 1602135-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021122**	**Date of Collection: 2/2/16 10:18:00 AM**	
Dil. Factor:	**326**	**Date of Analysis: 2/11/16 11:30 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	160	Not Detected	420	Not Detected
1,1-Dichloroethene	160	Not Detected	650	Not Detected
1,1,1-Trichloroethane	160	Not Detected	890	Not Detected
cis-1,2-Dichloroethene	160	Not Detected	650	Not Detected
Trichloroethene	160	28000	880	150000
Tetrachloroethene	160	330	1100	2300

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: VP-3-0216

Lab ID#: 1602135-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021123**	**Date of Collection: 2/2/16 10:20:00 AM**	
Dil. Factor:	**2.28**	**Date of Analysis: 2/11/16 11:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	77	6.2	420
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	18	6.1	100
Tetrachloroethene	1.1	19	7.7	130

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: VP-4-0216

Lab ID#: 1602135-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021124**	**Date of Collection: 2/2/16 9:25:00 AM**	
Dil. Factor:	**2.31**	**Date of Analysis: 2/12/16 12:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	2.9	6.3	16
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	28	6.2	150
Tetrachloroethene	1.2	15	7.8	100

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: VP-5-0216

Lab ID#: 1602135-15A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021120**	**Date of Collection: 2/2/16 9:22:00 AM**	
Dil. Factor:	**199**	**Date of Analysis: 2/11/16 10:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	100	Not Detected	250	Not Detected
1,1-Dichloroethene	100	Not Detected	390	Not Detected
1,1,1-Trichloroethane	100	450	540	2500
cis-1,2-Dichloroethene	100	Not Detected	390	Not Detected
Trichloroethene	100	17000	530	93000
Tetrachloroethene	100	250	670	1700

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: VP-6-0216

Lab ID#: 1602135-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021125**	**Date of Collection: 2/2/16 8:58:00 AM**	
Dil. Factor:	**2.33**	**Date of Analysis: 2/12/16 08:48 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	90	6.4	490
cis-1,2-Dichloroethene	1.2	3.8	4.6	15
Trichloroethene	1.2	93	6.3	500
Tetrachloroethene	1.2	28	7.9	190

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: VP-7-0216

Lab ID#: 1602135-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021126**	**Date of Collection: 2/2/16 11:18:00 AM**	
Dil. Factor:	**5.55**	**Date of Analysis: 2/12/16 09:14 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	2.8	Not Detected	7.1	Not Detected
1,1-Dichloroethene	2.8	30	11	120
1,1,1-Trichloroethane	2.8	850	15	4600
cis-1,2-Dichloroethene	2.8	31	11	120
Trichloroethene	2.8	74	15	400
Tetrachloroethene	2.8	23	19	150

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: VP-8-0216

Lab ID#: 1602135-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021127**	**Date of Collection: 2/2/16 11:24:00 AM**	
Dil. Factor:	**15.6**	**Date of Analysis: 2/12/16 09:38 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	7.8	Not Detected	20	Not Detected
1,1-Dichloroethene	7.8	120	31	460
1,1,1-Trichloroethane	7.8	2600	42	14000
cis-1,2-Dichloroethene	7.8	64	31	260
Trichloroethene	7.8	150	42	790
Tetrachloroethene	7.8	26	53	180

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: VP-9-0216

Lab ID#: 1602135-19A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021207**	**Date of Collection: 2/2/16 9:33:00 AM**	
Dil. Factor:	**2.45**	**Date of Analysis: 2/12/16 02:20 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	9.5	6.7	52
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	50	6.6	270
Tetrachloroethene	1.2	19	8.3	130

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1602135-20A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021107**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/16 01:57 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1602135-20B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021206**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/12/16 01:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: CCV

Lab ID#: 1602135-21A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/16 10:50 AM**	

Compound	%Recovery
Vinyl Chloride	79
1,1-Dichloroethene	82
1,1,1-Trichloroethane	88
cis-1,2-Dichloroethene	84
Trichloroethene	88
Tetrachloroethene	102

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: CCV

Lab ID#: 1602135-21B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/12/16 11:03 AM**	

Compound	%Recovery
Vinyl Chloride	80
1,1-Dichloroethene	83
1,1,1-Trichloroethane	89
cis-1,2-Dichloroethene	86
Trichloroethene	90
Tetrachloroethene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	87	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: LCS

Lab ID#: 1602135-22A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/16 11:15 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	84	70-130
1,1-Dichloroethene	85	70-130
1,1,1-Trichloroethane	91	70-130
cis-1,2-Dichloroethene	85	70-130
Trichloroethene	92	70-130
Tetrachloroethene	107	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: LCSD

Lab ID#: 1602135-22AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/16 11:40 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	84	70-130
1,1-Dichloroethene	85	70-130
1,1,1-Trichloroethane	91	70-130
cis-1,2-Dichloroethene	86	70-130
Trichloroethene	92	70-130
Tetrachloroethene	108	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: LCS

Lab ID#: 1602135-22B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/12/16 11:28 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	84	70-130
1,1-Dichloroethene	86	70-130
1,1,1-Trichloroethane	91	70-130
cis-1,2-Dichloroethene	85	70-130
Trichloroethene	94	70-130
Tetrachloroethene	110	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: LCSD

Lab ID#: 1602135-22BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17021204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/12/16 11:53 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	81	70-130
1,1-Dichloroethene	83	70-130
1,1,1-Trichloroethane	89	70-130
cis-1,2-Dichloroethene	84	70-130
Trichloroethene	93	70-130
Tetrachloroethene	109	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	112	70-130

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Sample Transportation Notice
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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmell
Collected by: (Print and Sign) E Wendel Erin Wendel
Company Landau Associates Email ckimmell@landauinc.com
Address 520 SW 6th Ave #830 City Portland State OR Zip 97204
Phone 5035422050 Fax 5035421073

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Pressurized by:
Date:
Pressurization Gas: N2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psig)
01A	BAP-78-0216	36571	2/2/16	1045	TO-15 (6 list)	26	5		
02A	BAP-79-0216	1730		1033		27.5	5		
03A	BAP-84-0216	36416		0955		30	5		
04A	BAP-85-0216	37654		1111		30	5		
05A	BAP-86-0216	1364		0910		30	5		
06A	BAP-87-0216	1701		1100		30	5		
07A	BAP-88-0216	1647		1055		29	5		
08A	~~FOR~~ VOW-16-0216	1735		1032		28.5	5		
09A	VOW-17-0216	35669		1008		30	5		
10A	VOW-18-0216	3057	↓	0955	↓	30	5		

Relinquished by: (signature) Date/Time: E Wendel 2/2/16 1500
Received by: (signature) Date/Time: FedEx 2-3-16 1145

Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Notes:

Lab Use Only
Shipper Name: FedEx
Air Bill #:
Temp (°C): 4°
Condition: Good
Custody Seals Intact? Yes No (None)
Work Order #: 1602135

Form 210 Rev 1

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager: Chris Kimmel
Collected by: (Print and sign) Erin Walker
Company: Landau Associates Email: CKimmel@landauinc.com
Address: 333 SW 5th Ave #400 City: Portland State: OR Zip: 97204
Phone: 503 542 1080 Fax: 503 542 1081

Project Info:
P.O. #: 025116.116.412
Project #: 025116.116.412
Project Name: Boeing of Portland

Turn Around Time:
☑ Normal
☐ Rush
Specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum: Initial	Final	Receipt	Final (psig)
1A	VP-1-0216	3021	2/2/16	1015	TO-15 (6 list)	30	5		
2A	VP-2-0216	12808		1018		26	4		
3A	VP-3-0216	34587		1020		30	4		
4A	VP-4-0216	8040		0925		30	5		
5A	VP-5-0216	1649		0922		30	5		
6A	VP-6-0216	1917		0958		30	5		
7A	VP-7-0216	2180		1118		30	5		
8A	VP-8-0216	37733		1124		30	5		
9A	VP-9-0216	1034	↓	0933	↓	30	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Walker	2/2/16 1500	BREATL	2-3-16 1115
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only
Shipper Name: FedEx
Air Bill #:
Temp (°C): 10a
Condition: Good
Custody Seals Intact? Yes No None
Work Order #: 160205

Form 1753 rev

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

February 15, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 02/04/2016
Group Number: 1628884
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-13-0216 Water	8230508
BOP-09i-0216 Water	8230509
BOP-56i-0216 Water	8230510
BOP-57ia-0216 Water	8230511
BOP-57ib-0216 Water	8230512
D-08i-0216 Water	8230513
D-12i-0216 Water	8230514
Trip Blank Water	8230515
BOP-72i-0216 Water	8230516
BOP-72i-0216 Total Metals Water	8230517
BOP-72i-0216 Dissolved Metals Water	8230518
BOP-73i-0216 Water	8230519
BOP-73i-0216 Total Metals Water	8230520
BOP-73i-0216 Dissolved Metals Water	8230521
BOP-74i-0216 Water	8230522
BOP-74i-0216 Total Metals Water	8230523
BOP-74i-0216 Dissolved Metals Water	8230524
BOP-75i-0216 Water	8230525
BOP-75i-0216 Total Metals Water	8230526
BOP-75i-0216 Dissolved Metals Water	8230527
BOP-76i-0216 Water	8230528
BOP-76i-0216 Total Metals Water	8230529
BOP-76i-0216 Dissolved Metals Water	8230530
BOP-77i-0216 Water	8230531
BOP-77i-0216 Total Metals Water	8230532
BOP-77i-0216 Dissolved Metals Water	8230533
BOP-80i-0216 Water	8230534
BOP-80i-0216 Total Metals Water	8230535
BOP-80i-0216 Dissolved Metals Water	8230536

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	Landau Associates	Attn: Dani Jorgensen
ELECTRONIC COPY TO	Landau	Attn: Brett Borgeson
ELECTRONIC COPY TO	Landau Associates	Attn: Terry McGourty
ELECTRONIC COPY TO	Landau	Attn: Chris Kimmel
ELECTRONIC COPY TO	Landau Associates	Attn: Anne Halvorsen

Respectfully Submitted,

Kay Hower

Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1628884

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.

Preservation requirements were not met.

Analysis Specific Comments:

RSKSOP-175 modified, GC Miscellaneous

Sample #s: 8230519, 8230522, 8230525, 8230528, 8230531, 8230534

The response for a target analyte(s) in the continuing calibration verification standard is outside the QC acceptance limits. Since the response is high indicating increased sensitivity, and the target analyte(s) is not detected in the sample, the data is reported.

Batch #: 160350030A (Sample number(s): 8230516, 8230519, 8230522, 8230525, 8230528, 8230531, 8230534 UNSPK: 8230516)

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

SW-846 6010C, Metals

Batch #: 160360635001 (Sample number(s): 8230517-8230518, 8230520-8230521, 8230523-8230524, 8230526-8230527 UNSPK: P229062 BKG: P229062)

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

SW-846 6010C, Metals Dissolved

Batch #: 160360635001 (Sample number(s): 8230517-8230518, 8230520-8230521, 8230523-8230524, 8230526-8230527 UNSPK: P229062 BKG: P229062)

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

EPA 300.0, Wet Chemistry

Sample #s: 8230522, 8230531

Reporting limits were raised due to interference from the sample matrix.

Sample Description: E-13-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230508
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 17:00 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

-E-13

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.5**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**13**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 21:51	Sara E Johnson	1

Sample Description: E-13-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230508
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 17:00 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

-E-13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 21:51	Sara E Johnson	1

Sample Description: BOP-09i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230509
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 15:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP09

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**26**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**8.8**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**37**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: BOP-09i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230509
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 15:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP09

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**7.3**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**30**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 22:12	Sara E Johnson	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160401AA	02/09/2016 14:27	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 22:12	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160401AA	02/09/2016 14:27	Kerri E Legerlotz	10

Sample Description: BOP-56i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230510
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 13:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP56

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**20**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1.5**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**17**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 22:32	Sara E Johnson	1

Sample Description: BOP-56i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230510
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 13:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP56

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 22:32	Sara E Johnson	1

Sample Description: BOP-57ia-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230511
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 11:15 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BO57A

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**35**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 22:52	Sara E Johnson	1

Sample Description: BOP-57ia-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230511
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 11:15 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BO57A

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 22:52	Sara E Johnson	1

Sample Description: BOP-57ib-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230512
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 11:25 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BO57B

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**23**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.5**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.5**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**48**	**E**	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**11**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.8**		0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	**1,1,1-Trichloroethane**	71-55-6	**17**		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**62**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.4**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-57ib-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230512
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 11:25 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BO57B

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**38**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**9.6**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	**1,1,1-Trichloroethane**	71-55-6	**13**		5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**50**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 02:56	Sara E Johnson	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160392AA	02/09/2016 03:16	Sara E Johnson	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 02:56	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160392AA	02/09/2016 03:16	Sara E Johnson	10

Sample Description: D-08i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230513
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 09:25 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

D-08I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**27**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.9**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	**1,1,1-Trichloroethane**	71-55-6	**0.5**		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**32**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: D-08i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230513
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 09:25 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

D-08I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	cis-1,2-Dichloroethene	156-59-2	2.0	U	2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**26**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 23:12	Sara E Johnson	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160401AA	02/09/2016 14:47	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 23:12	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160401AA	02/09/2016 14:47	Kerri E Legerlotz	10

Sample Description: D-12i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230514
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 09:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

D-12I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**27**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.7**		0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 23:33	Sara E Johnson	1

Sample Description: D-12i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230514
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/01/2016 09:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

D-12I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 23:33	Sara E Johnson	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230515
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 01/15/2016

The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

D12-T

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 21:31	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 21:31	Sara E Johnson	1

Sample Description: BOP-72i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230516
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:15 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP72

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**26**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.3**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**4,100**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	20
07105	Ethane	74-84-0	100	U	100	20
07105	Ethene	74-85-1	100	U	100	20

Sample Description: BOP-72i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230516
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:15 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP72

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**5,600**		100	20
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**4.7**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**3.2**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/08/2016 23:53	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/08/2016 23:53	Sara E Johnson	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160350030A	02/08/2016 10:28	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160350030A	02/08/2016 12:20	Johanna C Kennedy	20
00368	Nitrate Nitrogen	EPA 300.0	1	16035667901A	02/04/2016 16:29	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16035667901A	02/04/2016 16:29	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503A	02/08/2016 04:01	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133301A	02/08/2016 07:50	Susan E Hibner	1

Sample Description: BOP-72i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230517
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:15 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**25.6**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635001	02/09/2016 15:36	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-72i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230518
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:15 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**23.8**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635001	02/09/2016 15:45	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-73i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230519
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 11:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP73

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**35**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**1.8**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.9**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.5**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**6.1**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**8.8**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**72**		5.0	1
07105	**Ethene**	74-85-1	**77**		5.0	1
07105	**Methane**	74-82-8	**10,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

Sample Description: BOP-73i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230519
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 11:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP73

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**15,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**2.4**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**9.6**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 03:37	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 03:37	Sara E Johnson	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160350030A	02/05/2016 14:30	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160350030A	02/08/2016 12:38	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16035667901A	02/04/2016 17:11	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16035667901A	02/04/2016 17:11	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503A	02/08/2016 04:42	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133301A	02/08/2016 07:50	Susan E Hibner	1

Sample Description: BOP-73i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230520
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 11:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**18.7**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635001	02/09/2016 15:48	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-73i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230521
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 11:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**17.9**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635001	02/09/2016 15:51	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-74i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230522
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 14:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP74

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**32**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.8**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.6**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**11**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.8**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.1**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**19,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200

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Analysis Report

Sample Description: BOP-74i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230522
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 14:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP74

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	
07105	**Methane**	74-82-8	**21,000**	1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	1.0 U	1.0	10
	Reporting limits were raised due to interference from the sample matrix.				
00228	**Sulfate**	14808-79-8	**1,460**	200	200
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	**Total Organic Carbon**	n.a.	**4,200**	100	100
	EPA 376.1		**mg/l**	**mg/l**	
01333	**Sulfide**	18496-25-8	**5.1**	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 00:13	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 00:13	Sara E Johnson	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160350030A	02/05/2016 14:49	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160350030A	02/08/2016 12:57	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	2	16035667901A	02/04/2016 18:05	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16035667901A	02/06/2016 07:20	Drew M Gerhart	200
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503A	02/08/2016 04:55	James S Mathiot	100
01333	Sulfide	EPA 376.1	1	16039133301A	02/08/2016 07:50	Susan E Hibner	1

Sample Description: BOP-74i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230523
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 14:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**964**	2.00	5

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635001	02/10/2016 12:34	Katlin N Cataldi	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-74i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230524
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 14:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**961**	2.00	5

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635001	02/10/2016 12:41	Katlin N Cataldi	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-75i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230525
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 09:30 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP75

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**20**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**0.7**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.1**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**4.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**14,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

Sample Description: BOP-75i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230525
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 09:30 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP75

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**18,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**5.5**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.5**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 00:34	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 00:34	Sara E Johnson	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160350030A	02/05/2016 15:07	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160350030A	02/08/2016 13:16	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16035667901A	02/04/2016 18:19	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16035667901A	02/04/2016 18:19	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503A	02/09/2016 03:19	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133301A	02/08/2016 07:50	Susan E Hibner	1

Sample Description: BOP-75i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230526
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 09:30 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**18.7**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635001	02/09/2016 16:00	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

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Analysis Report

Sample Description: BOP-75i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230527
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 09:30 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**17.7**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635001	02/09/2016 16:03	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635001	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-76i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230528
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:55 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP76

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**53**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.4**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.7**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**9.8**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**13,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

Sample Description: BOP-76i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230528
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:55 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP76

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**16,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**6.3**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**5.0**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	**Sulfide**	18496-25-8	**3.9**		2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 00:54	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 00:54	Sara E Johnson	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160350030A	02/05/2016 15:26	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160350030A	02/08/2016 13:34	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16035667901A	02/04/2016 19:14	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16035667901A	02/04/2016 19:14	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503A	02/09/2016 03:33	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133301A	02/08/2016 07:50	Susan E Hibner	1

Sample Description: BOP-76i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230529
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:55 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**14.6**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635002	02/09/2016 12:52	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-76i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230530
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 10:55 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**8.01**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635002	02/09/2016 12:55	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-77i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230531
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 13:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**50**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**24**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**69**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**3.7**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.6**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**6.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**8.7**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**63**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: BOP-77i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230531
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 13:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**61**		2.0	10
11996	**trans-1,2-Dichloroethene**	156-60-5	**3.1**		2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**5.4**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	**Vinyl Chloride**	75-01-4	**7.2**		2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10
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**		5.0	1
07105	**Ethene**	74-85-1	**16**		5.0	1
07105	**Methane**	74-82-8	**11,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**20,000**		500	100
Wet Chemistry	**EPA 300.0**		mg/l		mg/l	
00368	Nitrate Nitrogen	14797-55-8	1.0	U	1.0	10
	Reporting limits were raised due to interference from the sample matrix.					
00228	**Sulfate**	14808-79-8	**1,530**		200	200
	SM 5310 C-2000		mg/l		mg/l	
00273	**Total Organic Carbon**	n.a.	**4,650**		250	250

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Analysis Report

Sample Description: BOP-77i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230531
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 13:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP77

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 376.1**		mg/l	mg/l	
01333	**Sulfide**	18496-25-8	**2.4**	2.0	1

General Sample Comments

Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for sulfide.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 04:17	Sara E Johnson	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160392AA	02/09/2016 04:38	Sara E Johnson	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 04:17	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160392AA	02/09/2016 04:38	Sara E Johnson	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160350030A	02/05/2016 15:45	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160350030A	02/08/2016 13:53	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	2	16035667901A	02/04/2016 20:09	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16035667901A	02/06/2016 07:33	Drew M Gerhart	200
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503A	02/08/2016 05:51	James S Mathiot	250
01333	Sulfide	EPA 376.1	1	16039133301A	02/08/2016 07:50	Susan E Hibner	1

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Analysis Report

Sample Description: BOP-77i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230532
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 13:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	mg/l	mg/l	
01754	**Iron**	7439-89-6	**1,100**	2.00	5

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635002	02/10/2016 00:38	Elaine F Stoltzfus	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

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Analysis Report

Sample Description: BOP-77i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230533
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 13:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**1,100**	2.00	5

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635002	02/10/2016 00:42	Elaine F Stoltzfus	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-80i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230534
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 15:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP80

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**21,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**27,000**		1,000	200

Sample Description: BOP-80i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230534
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 15:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

BOP80

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**1.4**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.1**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 04:58	Sara E Johnson	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 04:58	Sara E Johnson	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160350030A	02/05/2016 16:04	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160350030A	02/08/2016 14:11	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16035667901A	02/04/2016 20:23	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16035667901A	02/04/2016 20:23	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503A	02/08/2016 06:04	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133301A	02/08/2016 07:50	Susan E Hibner	1

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Analysis Report

Sample Description: BOP-80i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230535
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 15:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**12.9**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635002	02/09/2016 13:10	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-80i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8230536
LL Group # 1628884
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/03/2016 15:10 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**7.57**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635002	02/09/2016 13:13	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/15/2016 11:13

Group Number: 1628884

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: H160392AA	Sample number(s): 8230508-8230516,8230519,8230522,8230525,8230528,8230531,8230534		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H160401AA	Sample number(s): 8230509,8230513		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 02/15/2016 11:13

Group Number: 1628884

Analysis Name	Result		LOQ
	ug/l		ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 160350030A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 160360635001	Sample number(s): 8230517-8230518,8230520-8230521,8230523-8230524,8230526-8230527		
Iron	0.400	U	0.400
Batch number: 160360635002	Sample number(s): 8230529-8230530,8230532-8230533,8230535-8230536		
Iron	0.400	U	0.400
Batch number: 16035667901A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16039049503A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534		

*- 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.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 02/15/2016 11:13

Group Number: 1628884

Analysis Name	Result		LOQ
	mg/l		mg/l
Total Organic Carbon	1.0	U	1.0
Batch number: 16039133301A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534		
Sulfide	2.0	U	2.0

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: H160392AA	Sample number(s): 8230508-8230516,8230519,8230522,8230525,8230528,8230531,8230534								
Acetone	37.5	35.48	37.5	36.87	95	98	55-136	4	30
Benzene	5.00	5.00	5.00	4.93	100	99	80-120	1	30
Bromodichloromethane	5.00	5.01	5.00	4.92	100	98	80-120	2	30
Bromoform	5.00	4.69	5.00	4.75	94	95	64-134	1	30
Bromomethane	5.00	5.12	5.00	5.00	102	100	71-126	2	30
2-Butanone	37.5	38.33	37.5	38.69	102	103	66-135	1	30
Carbon Disulfide	5.00	4.83	5.00	4.82	97	96	70-128	0	30
Carbon Tetrachloride	5.00	5.24	5.00	5.19	105	104	79-129	1	30
Chlorobenzene	5.00	4.83	5.00	4.88	97	98	80-120	1	30
Chloroethane	5.00	4.85	5.00	4.76	97	95	71-122	2	30
Chloroform	5.00	4.96	5.00	4.98	99	100	80-120	0	30
Chloromethane	5.00	4.60	5.00	4.49	92	90	63-121	3	30
Dibromochloromethane	5.00	4.80	5.00	4.84	96	97	80-126	1	30
1,1-Dichloroethane	5.00	4.61	5.00	4.62	92	92	80-120	0	30
1,2-Dichloroethane	5.00	4.72	5.00	4.66	94	93	80-125	1	30
1,1-Dichloroethene	5.00	5.09	5.00	5.00	102	100	80-120	2	30
cis-1,2-Dichloroethene	5.00	5.12	5.00	5.05	102	101	80-120	2	30
trans-1,2-Dichloroethene	5.00	5.25	5.00	5.13	105	103	80-120	2	30
1,2-Dichloropropane	5.00	5.01	5.00	4.92	100	98	80-120	2	30
cis-1,3-Dichloropropene	5.00	4.86	5.00	4.74	97	95	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.59	5.00	4.64	92	93	76-132	1	30
Ethylbenzene	5.00	4.76	5.00	4.81	95	96	80-120	1	30
2-Hexanone	25	25.88	25	26.21	104	105	71-138	1	30
4-Methyl-2-pentanone	25	25.19	25	25.28	101	101	73-135	0	30
Methylene Chloride	5.00	5.04	5.00	4.92	101	98	80-120	2	30
Styrene	5.00	4.97	5.00	4.96	99	99	80-122	0	30
1,1,2,2-Tetrachloroethane	5.00	4.53	5.00	4.55	91	91	80-120	0	30
Tetrachloroethene	5.00	4.71	5.00	4.73	94	95	80-120	0	30
Toluene	5.00	4.72	5.00	4.74	94	95	80-120	0	30
112Trichloro122Trifluoroethane	5.00	5.32	5.00	5.21	106	104	75-120	2	30
1,1,1-Trichloroethane	5.00	5.05	5.00	5.04	101	101	80-120	0	30
1,1,2-Trichloroethane	5.00	4.73	5.00	4.75	95	95	80-120	0	30
Trichloroethene	5.00	5.27	5.00	5.17	105	103	80-120	2	30
Trichlorofluoromethane	5.00	5.40	5.00	5.25	108	105	69-133	3	30
Vinyl Acetate	12.5	10.97	12.5	10.69	88	86	10-183	3	30
Vinyl Chloride	5.00	5.03	5.00	4.85	101	97	71-123	4	30
m+p-Xylene	10	9.74	10	9.79	97	98	80-120	1	30
o-Xylene	5.00	4.85	5.00	4.88	97	98	80-120	1	30
Batch number: H160401AA	Sample number(s): 8230509,8230513								
Acetone	37.5	34.23	37.5	34.56	91	92	55-136	1	30

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Quality Control Summary

Client Name: The Boeing Company
Reported: 02/15/2016 11:13

Group Number: 1628884

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					
Benzene	5.00	5.26	5.00	5.03	105	101	80-120	5	30
Bromodichloromethane	5.00	5.38	5.00	5.18	108	104	80-120	4	30
Bromoform	5.00	5.33	5.00	4.92	107	98	64-134	8	30
Bromomethane	5.00	5.40	5.00	5.10	108	102	71-126	6	30
2-Butanone	37.5	33.49	37.5	36.27	89	97	66-135	8	30
Carbon Disulfide	5.00	5.05	5.00	4.85	101	97	70-128	4	30
Carbon Tetrachloride	5.00	5.82	5.00	5.41	116	108	79-129	7	30
Chlorobenzene	5.00	5.19	5.00	4.93	104	99	80-120	5	30
Chloroethane	5.00	5.21	5.00	5.07	104	101	71-122	3	30
Chloroform	5.00	5.29	5.00	5.10	106	102	80-120	4	30
Chloromethane	5.00	4.81	5.00	4.55	96	91	63-121	6	30
Dibromochloromethane	5.00	5.27	5.00	5.09	105	102	80-126	4	30
1,1-Dichloroethane	5.00	5.05	5.00	4.83	101	97	80-120	5	30
1,2-Dichloroethane	5.00	5.11	5.00	4.94	102	99	80-125	3	30
1,1-Dichloroethene	5.00	5.34	5.00	5.12	107	102	80-120	4	30
cis-1,2-Dichloroethene	5.00	5.29	5.00	5.09	106	102	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.43	5.00	5.23	109	105	80-120	4	30
1,2-Dichloropropane	5.00	5.32	5.00	5.16	106	103	80-120	3	30
cis-1,3-Dichloropropene	5.00	5.03	5.00	4.81	101	96	80-124	4	30
trans-1,3-Dichloropropene	5.00	5.01	5.00	4.86	100	97	76-132	3	30
Ethylbenzene	5.00	5.17	5.00	4.95	103	99	80-120	4	30
2-Hexanone	25	22.02	25	24.71	88	99	71-138	12	30
4-Methyl-2-pentanone	25	22.57	25	23.69	90	95	73-135	5	30
Methylene Chloride	5.00	5.12	5.00	4.96	102	99	80-120	3	30
Styrene	5.00	5.30	5.00	5.10	106	102	80-122	4	30
1,1,2,2-Tetrachloroethane	5.00	4.98	5.00	4.73	100	95	80-120	5	30
Tetrachloroethene	5.00	5.15	5.00	4.88	103	98	80-120	5	30
Toluene	5.00	5.06	5.00	4.88	101	98	80-120	4	30
112Trichloro122Trifluoroethane	5.00	5.54	5.00	5.44	111	109	75-120	2	30
1,1,1-Trichloroethane	5.00	5.54	5.00	5.28	111	106	80-120	5	30
1,1,2-Trichloroethane	5.00	4.96	5.00	4.91	99	98	80-120	1	30
Trichloroethene	5.00	5.54	5.00	5.28	111	106	80-120	5	30
Trichlorofluoromethane	5.00	5.56	5.00	5.30	111	106	69-133	5	30
Vinyl Acetate	12.5	12.9	12.5	12.93	103	103	10-183	0	30
Vinyl Chloride	5.00	5.12	5.00	4.84	102	97	71-123	6	30
m+p-Xylene	10	10.58	10	10.15	106	101	80-120	4	30
o-Xylene	5.00	5.19	5.00	4.99	104	100	80-120	4	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 160350030A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534								
Acetylene	51	57.66			113		79-126		
Ethane	59.2	61.13			103		85-115		
Ethene	60.4	62.53			104		83-115		
Methane	61.3	67.75			111		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 160360635001	Sample number(s): 8230517-8230518,8230520-8230521,8230523-8230524,8230526-8230527								
Iron	1.00	0.985			99		80-120		
Batch number: 160360635002	Sample number(s): 8230529-8230530,8230532-8230533,8230535-8230536								
Iron	1.00	1.02			102		80-120		

*- Outside of specification
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Quality Control Summary

Client Name: The Boeing Company
Reported: 02/15/2016 11:13

Group Number: 1628884

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16035667901A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534								
Nitrate Nitrogen	0.750	0.729			97		90-110		
Sulfate	7.50	7.06			94		90-110		
Batch number: 16039049503A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534								
Total Organic Carbon	25	25.11			100		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16039133301A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534								
Sulfide	20	19.07	20	19.07	95	95	80-120	0	4

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: 160350030A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534 UNSPK: 8230516									
Acetylene	5.0 U	51	53.44	51	49.63	105	97	79-126	7	20
Ethane	5.0 U	59.2	62.21	59.2	58.51	105	99	74-131	6	30
Ethene	1.02	60.4	86.48	60.4	80.48	141*	132	72-133	7	30
Methane	4083.08	61.3	3923.24	61.3	4307.29	-260 (2)	366 (2)	73-125	9	30
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 160360635001	Sample number(s): 8230517-8230518,8230520-8230521,8230523-8230524,8230526-8230527 UNSPK: P229062									
Iron	0.151	1.00	1.04	1.00	1.10	89	95	75-125	6	20
Batch number: 160360635002	Sample number(s): 8230529-8230530,8230532-8230533,8230535-8230536 UNSPK: P229066									
Iron	0.0530	1.00	1.03	1.00	1.00	98	95	75-125	3	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16035667901A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534 UNSPK: P230491									
Nitrate Nitrogen	0.511	5.00	5.19			94		90-110		
Sulfate	37.16	50	82.96			92		90-110		
Batch number: 16039049503A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534 UNSPK: 8230516									
Total Organic Carbon	3.23	10	13.56			103		91-113		

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max

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

Client Name: The Boeing Company
Reported: 02/15/2016 11:13

Group Number: 1628884

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 160360635001	Sample number(s): 8230517-8230518,8230520-8230521,8230523-8230524,8230526-8230527 BKG: P229062			
Iron	0.151	0.100	41* (1)	20
Batch number: 160360635002	Sample number(s): 8230529-8230530,8230532-8230533,8230535-8230536 BKG: P229066			
Iron	0.0530	0.0499	6 (1)	20
	mg/l	mg/l		
Batch number: 16035667901A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534 BKG: P230491			
Nitrate Nitrogen	0.511	0.487	5 (1)	15
Sulfate	37.16	37.1	0	15
Batch number: 16039049503A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534 BKG: 8230516			
Total Organic Carbon	3.23	3.30	2 (1)	3
	mg/l	mg/l		
Batch number: 16039133301A	Sample number(s): 8230516,8230519,8230522,8230525,8230528,8230531,8230534 BKG: P231500			
Sulfide	2.0 U	2.0 U	0 (1)	20

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 Boeing 38
Batch number: H160392AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8230508	107	104	95	99
8230509	109	104	93	98
8230510	106	106	94	99
8230511	106	104	95	98
8230512	105	102	96	97
8230512DL	104	100	97	96
8230513	104	99	96	98
8230514	104	102	95	96
8230515	103	98	98	96
8230516	104	96	98	98
8230519	104	100	97	96
8230522	103	96	95	100
8230525	103	100	97	96
8230528	104	99	98	97
8230531	104	100	94	100
8230531DL	108	105	93	99
8230534	106	104	95	98
Blank	106	104	94	99
LCS	106	101	95	102
LCSD	105	99	96	101

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Quality Control Summary

Client Name: The Boeing Company
Reported: 02/15/2016 11:13

Group Number: 1628884

Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H160401AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8230509DL	103	99	96	97
8230513DL	106	99	97	97
Blank	104	101	97	98
LCS	102	102	98	102
LCSD	102	97	98	101
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 160350030A

	Propene
8230516	78
8230516DL	95
8230519	76
8230519DL	100
8230522	83
8230522DL	101
8230525	86
8230525DL	95
8230528	85
8230528DL	98
8230531	97
8230531DL	101
8230534	89
8230534DL	99
Blank	99
LCS	99
MS	81
MSD	73
Limits:	44-123

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Boeing Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 1349 For Eurofins Lancaster Laboratories use only Group # 1628884 Sample # 8230505-36

Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW/SMM # of Coolers: 2

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	4 Analyses Requested: VOC (38 List)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron	5 Remarks/Comments
E-13-0216	2/1/16	1700	H2O	3	X								
BOP-09i-0216		1540		3	X								
BOP-56i-0216		1310		3	X								
BOP-57ia-0216		1115		3	X								
BOP-57ib-0216		1125		3	X								
D-08i-0216		0925		3	X								
D-12i-0216		0940		3	X								
Trip Blanks	1/15/16	→		2	X								
BOP-72i-0216	2/3/16	1015	H2O	14	X	X	X	X	X	X	X	X	
BOP-73i-0216		1140		14	X	X	X	X	X	X	X	X	
BOP-74i-0216		1410		14	X	X	X	X	X	X	X	X	
BOP-75i-0216		0930		14	X	X	X	X	X	X	X	X	
BOP-76i-0216		1055		14	X	X	X	X	X	X	X	X	
BOP-77i-0216		1310		14	X	X	X	X	X	X	X	X	
BOP-80i-0216		1510		14	X	X	X	X	X	X	X	X	

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time 7
[signature]	2/3/16 1650		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 2/4/16 0940

Relinquished by commercial carrier (circle): UPS FedEx Other: _____

Temperature upon Receipt: 2.3-1.2 °C 0.7

Custody Seals Intact?: Yes No

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Sample Administration Receipt Documentation Log

Doc Log ID: 135335

Group Number(s): 1628884

Client: BOEING

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/04/2016 9:40
Number of Packages:	2	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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 Carolyn Cyms (964) at 10:33 on 02/04/2016

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	DT131	0.3	DT	Wet	Y	Bagged	N
2	DT131	1.2	DT	Wet	Y	Bagged	N

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Lancaster, PA 17605-2425

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F : 717-656-2681
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Sample Administration Receipt Documentation Log

Doc Log ID: 135343

Group Number(s): 1628884

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/04/2016 9:40
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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		

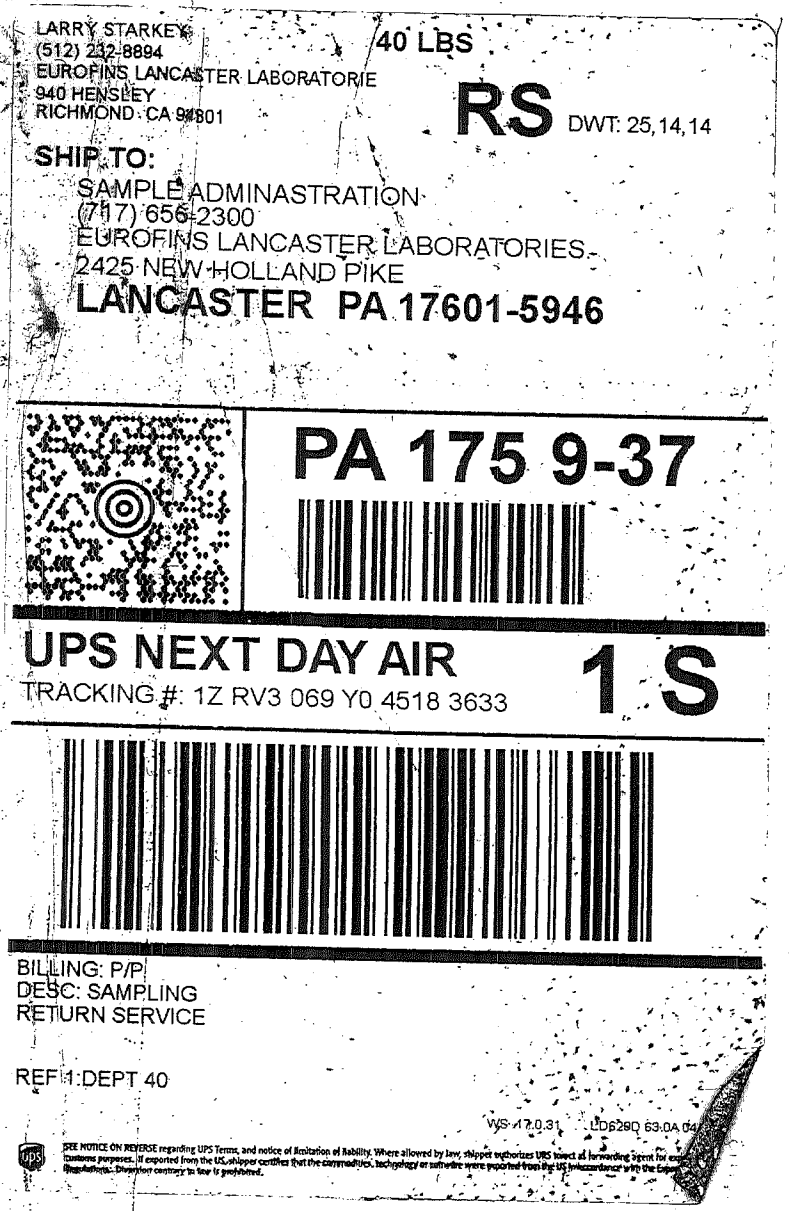
Unpacked by Wesley Miller (2308) at 11:11 on 02/04/2016

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	DT131	0.7	DT	Wet	Y	Bagged	N

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LARRY STARKEY
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RICHMOND CA 94801

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LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S
TRACKING #: 1Z RV3 069 Y0 4518 3633

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

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WS 17.0.31 LD6290 63.0A 04

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UPS NEXT DAY AIR 1 S
TRACKING #: 1Z RV3 069 Y0 4327 6822

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

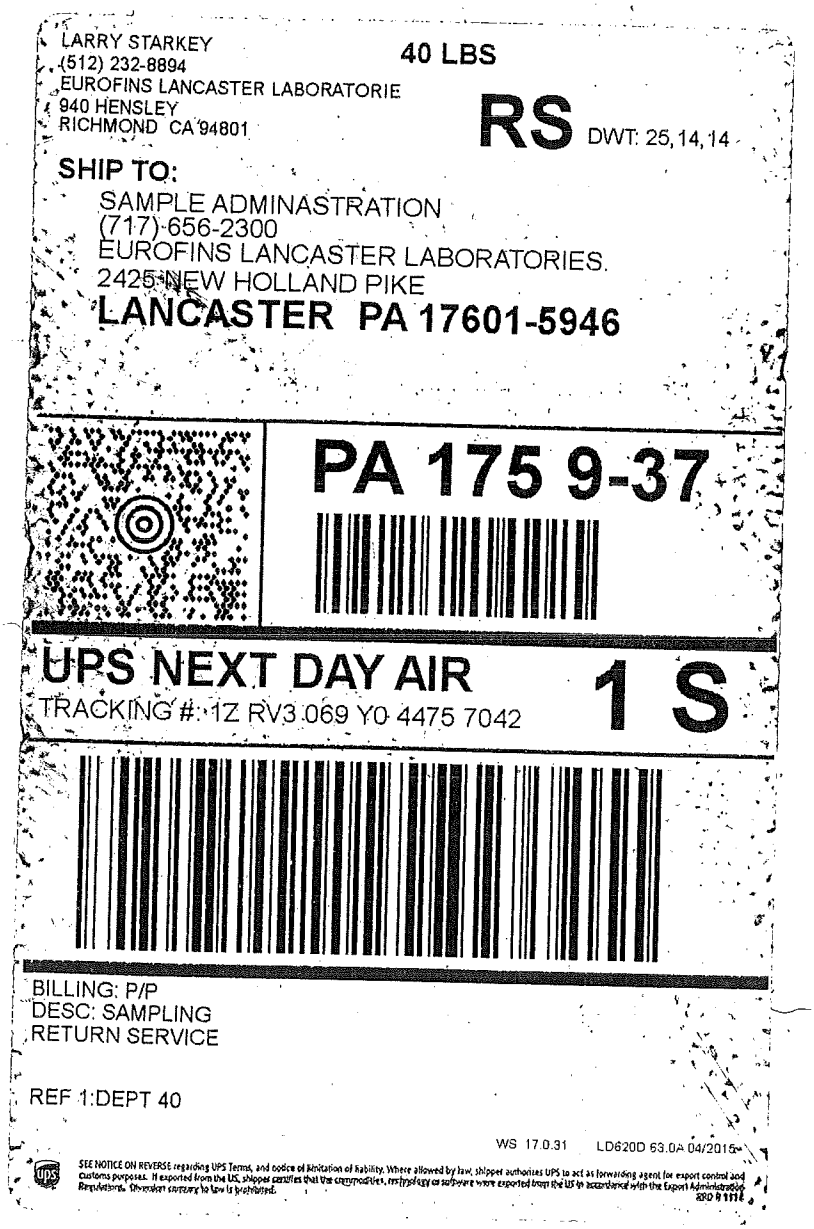
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1628884

1628884



LARRY STARKEY
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940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25, 14, 14

SHIP TO:
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EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR

TRACKING #: 1Z RV3 069 Y0 4475 7042

1 S

BILLING: P/P
DESC: SAMPLING
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REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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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 ≥ 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:

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

Prepared for:

The Boeing Company

February 16, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 02/05/2016
Group Number: 1629320
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-4-0216 Water	8232658
E-4-0216 Total Metals Water	8232659
E-4-0216 Dissolved Metals Water	8232660
BOP-07i-0216 Water	8232661
BOP-16i-0216 Water	8232662
BOP-16i-0216 Total Metals Water	8232663
BOP-16i-0216 Dissolved Metals Water	8232664
BOP-78i-0216 Water	8232665
BOP-79i-0216 Water	8232666
BOP-81i-0216 Water	8232667
BOP-81i-0216 Total Metals Water	8232668
BOP-81i-0216 Dissolved Metals Water	8232669
BOP-82i-0216 Water	8232670
BOP-82i-0216 Total Metals Water	8232671
BOP-82i-0216 Dissolved Metals Water	8232672
BOP-83i-0216 Water	8232673
BOP-83i-0216 Total Metals Water	8232674
BOP-83i-0216 Dissolved Metals Water	8232675
BOP-84i-0216 Water	8232676
BOP-85i-0216 Water	8232677
BOP-86i-0216 Water	8232678
BOP-87i-0216 Water	8232679
BOP-88i-0216 Water	8232680
BOP-88i-0216 Total Metals Water	8232681
BOP-88i-0216 Dissolved Metals Water	8232682
BOP-x-0216 Water	8232683
Trip Blank Water	8232684

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/ .

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Respectfully Submitted,

Kay Hower

Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1629320

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.

Preservation requirements were not met.

Analysis Specific Comments:

RSKSOP-175 modified, GC Miscellaneous

Batch #: 160390003A (Sample number(s): 8232658, 8232661-8232662, 8232667, 8232670, 8232673, 8232680 UNSPK: 8232658)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 8232680, 8232680RE

EPA 300.0, Wet Chemistry

Sample #s: 8232680

Reporting limits were raised due to interference from the sample matrix.

SM 5310 C-2000, Wet Chemistry

Batch #: 16039049504A (Sample number(s): 8232661-8232662, 8232667, 8232670, 8232673, 8232680 UNSPK: P232737 BKG: P232737)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

EPA 376.1, Wet Chemistry

Sample #s: 8232680

Reporting limits were raised due to interference from the sample matrix.

Batch #: 16039133302A (Sample number(s): 8232658, 8232662, 8232667, 8232670, 8232673, 8232680 BKG: 8232680)

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

Sample Description: E-4-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232658
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 14:10 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

E4216

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**4.9**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**1.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**1**		0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**32**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: E-4-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232658
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 14:10 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

E4216

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**3.9**		2.0	10
11996	cis-1,2-Dichloroethene	156-59-2	2.0	U	2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**26**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10
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	**7.2**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.78**		0.10	1
00228	**Sulfate**	14808-79-8	**6.9**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Description: E-4-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232658
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 14:10 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

E4216

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 15:08	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160421AA	02/11/2016 13:30	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 15:08	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160421AA	02/11/2016 13:30	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 17:05	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16036667901A	02/05/2016 14:24	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16036667901A	02/05/2016 14:24	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049503B	02/08/2016 09:15	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: E-4-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232659
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 14:10 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	Iron	7439-89-6	0.400 U	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635002	02/09/2016 13:16	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: E-4-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232660
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 14:10 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635002	02/09/2016 13:19	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635002	02/08/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-07i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232661
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 12:20 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B07I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**19**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**20**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**5.0**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**300**	**E**	2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10
Trial ID: DL						
11996	Acetone	67-64-1	500	U	500	100
11996	Benzene	71-43-2	20	U	20	100
11996	Bromodichloromethane	75-27-4	50	U	50	100
11996	Bromoform	75-25-2	50	U	50	100
11996	Bromomethane	74-83-9	50	U	50	100
11996	2-Butanone	78-93-3	500	U	500	100
11996	Carbon Disulfide	75-15-0	50	U	50	100
11996	Carbon Tetrachloride	56-23-5	20	U	20	100
11996	Chlorobenzene	108-90-7	50	U	50	100
11996	Chloroethane	75-00-3	50	U	50	100

Sample Description: BOP-07i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232661
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 12:20 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B07I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	20	U	20	100
11996	Chloromethane	74-87-3	50	U	50	100
11996	Dibromochloromethane	124-48-1	50	U	50	100
11996	1,1-Dichloroethane	75-34-3	50	U	50	100
11996	1,2-Dichloroethane	107-06-2	20	U	20	100
11996	**1,1-Dichloroethene**	75-35-4	**24**		20	100
11996	**cis-1,2-Dichloroethene**	156-59-2	**22**		20	100
11996	trans-1,2-Dichloroethene	156-60-5	20	U	20	100
11996	1,2-Dichloropropane	78-87-5	50	U	50	100
11996	cis-1,3-Dichloropropene	10061-01-5	20	U	20	100
11996	trans-1,3-Dichloropropene	10061-02-6	20	U	20	100
11996	Ethylbenzene	100-41-4	50	U	50	100
11996	2-Hexanone	591-78-6	500	U	500	100
11996	4-Methyl-2-pentanone	108-10-1	500	U	500	100
11996	Methylene Chloride	75-09-2	50	U	50	100
11996	Styrene	100-42-5	50	U	50	100
11996	1,1,2,2-Tetrachloroethane	79-34-5	20	U	20	100
11996	Tetrachloroethene	127-18-4	20	U	20	100
11996	Toluene	108-88-3	20	U	20	100
11996	112Trichloro122Trifluoroethane	76-13-1	50	U	50	100
11996	1,1,1-Trichloroethane	71-55-6	50	U	50	100
11996	1,1,2-Trichloroethane	79-00-5	20	U	20	100
11996	**Trichloroethene**	79-01-6	**350**		20	100
11996	Trichlorofluoromethane	75-69-4	50	U	50	100
11996	Vinyl Acetate	108-05-4	50	U	50	100
11996	Vinyl Chloride	75-01-4	20	U	20	100
11996	m+p-Xylene	179601-23-1	50	U	50	100
11996	o-Xylene	95-47-6	50	U	50	100
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	**7.0**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.1**		0.10	1
00228	**Sulfate**	14808-79-8	**7.7**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

General Sample Comments

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

Sample Description: BOP-07i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232661
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 12:20 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B07I-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 18:11	Kerri E Legerlotz	10
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160401AA	02/09/2016 18:31	Kerri E Legerlotz	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 18:11	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160401AA	02/09/2016 18:31	Kerri E Legerlotz	100
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 18:00	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16036667901A	02/05/2016 14:51	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16036667901A	02/05/2016 14:51	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049504A	02/08/2016 09:56	James S Mathiot	1

Sample Description: BOP-16i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232662
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 13:45 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B16I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**3,300**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	20
07105	Ethane	74-84-0	100	U	100	20
07105	Ethene	74-85-1	100	U	100	20
07105	**Methane**	74-82-8	**4,600**		100	20

Sample Description: BOP-16i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232662
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 13:45 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B16I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**5.8**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 15:28	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 15:28	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 18:38	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160390003A	02/09/2016 09:33	Johanna C Kennedy	20
00368	Nitrate Nitrogen	EPA 300.0	1	16036667901A	02/05/2016 15:46	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16036667901A	02/05/2016 15:46	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049504A	02/08/2016 10:09	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: BOP-16i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232663
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 13:45 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.645**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 21:58	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

Sample Description: BOP-16i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232664
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 13:45 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.601**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 22:02	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

Sample Description: BOP-78i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232665
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:27 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B78I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**24**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**29**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.6**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**4.2**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.3**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-78i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232665
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:27 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B78I-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 15:48	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 15:48	Kerri E Legerlotz	1

Sample Description: BOP-79i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232666
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:43 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B79I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**67**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**44**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.1**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.8**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.5**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.2**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**19**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.9**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.5**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

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

Sample Description: BOP-79i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232666
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:43 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B79I-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 16:08	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 16:08	Kerri E Legerlotz	1

Sample Description: BOP-81i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232667
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 10:20 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B81I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**22**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**7,600**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	250	U	250	50
07105	Ethane	74-84-0	250	U	250	50
07105	Ethene	74-85-1	250	U	250	50
07105	**Methane**	74-82-8	**10,000**		250	50

Sample Description: BOP-81i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232667
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 10:20 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B81I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**7.1**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 16:29	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 16:29	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 18:56	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160390003A	02/09/2016 09:52	Johanna C Kennedy	50
00368	Nitrate Nitrogen	EPA 300.0	1	16036667901A	02/05/2016 16:14	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16036667901A	02/05/2016 16:14	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049504A	02/08/2016 10:37	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: BOP-81i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232668
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 10:20 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**4.19**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 22:05	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

Sample Description: BOP-81i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232669
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 10:20 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**2.86**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 22:08	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

Sample Description: BOP-82i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232670
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 11:30 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B82I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**21**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.4**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**2,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50	U	50	10
07105	Ethane	74-84-0	50	U	50	10
07105	Ethene	74-85-1	50	U	50	10

Sample Description: BOP-82i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232670
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 11:30 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B82I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**2,300**		50	10
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.22**		0.10	1
00228	**Sulfate**	14808-79-8	**11.5**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 16:49	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 16:49	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 19:15	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160390003A	02/09/2016 10:10	Johanna C Kennedy	10
00368	Nitrate Nitrogen	EPA 300.0	1	16036667901A	02/05/2016 16:41	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16036667901A	02/05/2016 16:41	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049504A	02/08/2016 10:51	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: BOP-82i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232671
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 11:30 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**5.45**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 22:11	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

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Analysis Report

Sample Description: BOP-82i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232672
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 11:30 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**2.53**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 22:15	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

Sample Description: BOP-83i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232673
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 15:25 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B83I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**18**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**360**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**3.3**		1.0	10
00228	**Sulfate**	14808-79-8	**7.5**		1.0	1

Sample Description: BOP-83i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232673
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 15:25 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B83I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**SM 5310 C-2000**		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 17:09	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 17:09	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 19:34	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16036667901A	02/05/2016 17:22	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16036667901A	02/05/2016 17:08	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049504A	02/08/2016 11:04	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: BOP-83i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232674
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 15:25 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**19.2**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 07:13	Joanne M Gates	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

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Analysis Report

Sample Description: BOP-83i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232675
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 15:25 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.628**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160360635003	02/10/2016 22:18	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160360635003	02/08/2016 10:18	Christopher M Klumpp	1

Sample Description: BOP-84i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232676
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:50 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B84I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**31**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.7**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.0**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.5**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.0**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-84i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232676
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:50 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B84I-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 17:30	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 17:30	Kerri E Legerlotz	1

Sample Description: BOP-85i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232677
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:30 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B85I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**31**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**420**	**E**	5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.1**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.9**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.7**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.4**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.5**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	**2-Butanone**	78-93-3	**310**		50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-85i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232677
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:30 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B85I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	**Chloroform**	67-66-3	**3.3**		2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	cis-1,2-Dichloroethene	156-59-2	2.0	U	2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	Trichloroethene	79-01-6	2.0	U	2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 17:50	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160461AA	02/15/2016 10:59	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 17:50	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160461AA	02/15/2016 10:59	Kerri E Legerlotz	10

Sample Description: BOP-86i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232678
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:40 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B86I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**15**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.1**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**4.2**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.9**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.6**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**6.4**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**1.5**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-86i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232678
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 09:40 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B86I-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 12:49	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 12:49	Kerri E Legerlotz	1

Sample Description: BOP-87i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232679
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:45 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B87I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**28**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**38**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.3**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.9**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**1.8**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-87i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232679
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:45 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B87I-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 13:10	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 13:10	Kerri E Legerlotz	1

Sample Description: BOP-88i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232680
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:50 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B88I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**89**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.0**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**4.2**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**24**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**1.2**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**4.1**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**7.2**		5.0	1
07105	**Methane**	74-82-8	**8,100**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	250	U	250	50
07105	Ethane	74-84-0	250	U	250	50
07105	Ethene	74-85-1	250	U	250	50

Sample Description: BOP-88i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232680
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:50 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

B88I-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**11,000**		250	50
Trial ID: RE						
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	**6.7**		5.0	1
07105	**Methane**	74-82-8	**7,200**	**E**	5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	1.0	U	1.0	10
	Reporting limits were raised due to interference from the sample matrix.					
00228	**Sulfate**	14808-79-8	**2,270**		500	500
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**8,570**		100	100
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	20.0	U	20.0	10
	Reporting limits were raised due to interference from the sample matrix.					

General Sample Comments

Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for TOC amd sulfide.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 14:10	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 14:10	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 19:53	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160390003A	02/09/2016 10:29	Johanna C Kennedy	50
07105	AMEE by RSK-175	RSKSOP-175 modified	3-RE	160390003A	02/15/2016 19:13	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16036667901A	02/05/2016 13:29	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16036667901A	02/05/2016 13:56	Drew M Gerhart	500
00273	Total Organic Carbon	SM 5310 C-2000	1	16039049504A	02/08/2016 11:18	James S Mathiot	100
01333	Sulfide	EPA 376.1	2	16042133301A	02/11/2016 12:45	Susan E Hibner	10

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Analysis Report

Sample Description: BOP-88i-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232681
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:50 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**2,520**	4.00	10

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160390635001	02/15/2016 16:54	Suzanne M Will	10
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

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Analysis Report

Sample Description: BOP-88i-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232682
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:50 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**2,470**	8.00	20

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160390635001	02/15/2016 16:58	Suzanne M Will	20
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: BOP-x-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232683
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:00 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

BOP-X

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	25	U	25	5
11996	Benzene	71-43-2	1.0	U	1.0	5
11996	Bromodichloromethane	75-27-4	2.5	U	2.5	5
11996	Bromoform	75-25-2	2.5	U	2.5	5
11996	Bromomethane	74-83-9	2.5	U	2.5	5
11996	2-Butanone	78-93-3	25	U	25	5
11996	Carbon Disulfide	75-15-0	2.5	U	2.5	5
11996	Carbon Tetrachloride	56-23-5	1.0	U	1.0	5
11996	Chlorobenzene	108-90-7	2.5	U	2.5	5
11996	Chloroethane	75-00-3	2.5	U	2.5	5
11996	Chloroform	67-66-3	1.0	U	1.0	5
11996	Chloromethane	74-87-3	2.5	U	2.5	5
11996	Dibromochloromethane	124-48-1	2.5	U	2.5	5
11996	1,1-Dichloroethane	75-34-3	2.5	U	2.5	5
11996	1,2-Dichloroethane	107-06-2	1.0	U	1.0	5
11996	**1,1-Dichloroethene**	75-35-4	**22**		1.0	5
11996	**cis-1,2-Dichloroethene**	156-59-2	**22**		1.0	5
11996	trans-1,2-Dichloroethene	156-60-5	1.0	U	1.0	5
11996	1,2-Dichloropropane	78-87-5	2.5	U	2.5	5
11996	cis-1,3-Dichloropropene	10061-01-5	1.0	U	1.0	5
11996	trans-1,3-Dichloropropene	10061-02-6	1.0	U	1.0	5
11996	Ethylbenzene	100-41-4	2.5	U	2.5	5
11996	2-Hexanone	591-78-6	25	U	25	5
11996	4-Methyl-2-pentanone	108-10-1	25	U	25	5
11996	Methylene Chloride	75-09-2	2.5	U	2.5	5
11996	Styrene	100-42-5	2.5	U	2.5	5
11996	1,1,2,2-Tetrachloroethane	79-34-5	1.0	U	1.0	5
11996	**Tetrachloroethene**	127-18-4	**5.6**		1.0	5
11996	Toluene	108-88-3	1.0	U	1.0	5
11996	**112Trichloro122Trifluoroethane**	76-13-1	**3.1**		2.5	5
11996	**1,1,1-Trichloroethane**	71-55-6	**3.4**		2.5	5
11996	1,1,2-Trichloroethane	79-00-5	1.0	U	1.0	5
11996	**Trichloroethene**	79-01-6	**350**	**E**	1.0	5
11996	Trichlorofluoromethane	75-69-4	2.5	U	2.5	5
11996	Vinyl Acetate	108-05-4	2.5	U	2.5	5
11996	Vinyl Chloride	75-01-4	1.0	U	1.0	5
11996	m+p-Xylene	179601-23-1	2.5	U	2.5	5
11996	o-Xylene	95-47-6	2.5	U	2.5	5
Trial ID: DL						
11996	Acetone	67-64-1	250	U	250	50
11996	Benzene	71-43-2	10	U	10	50
11996	Bromodichloromethane	75-27-4	25	U	25	50
11996	Bromoform	75-25-2	25	U	25	50
11996	Bromomethane	74-83-9	25	U	25	50
11996	2-Butanone	78-93-3	250	U	250	50
11996	Carbon Disulfide	75-15-0	25	U	25	50
11996	Carbon Tetrachloride	56-23-5	10	U	10	50
11996	Chlorobenzene	108-90-7	25	U	25	50

Sample Description: BOP-x-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232683
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/04/2016 08:00 by EMW The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

BOP-X

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	25	U	25	50
11996	Chloroform	67-66-3	10	U	10	50
11996	Chloromethane	74-87-3	25	U	25	50
11996	Dibromochloromethane	124-48-1	25	U	25	50
11996	1,1-Dichloroethane	75-34-3	25	U	25	50
11996	1,2-Dichloroethane	107-06-2	10	U	10	50
11996	**1,1-Dichloroethene**	75-35-4	**22**		10	50
11996	**cis-1,2-Dichloroethene**	156-59-2	**23**		10	50
11996	trans-1,2-Dichloroethene	156-60-5	10	U	10	50
11996	1,2-Dichloropropane	78-87-5	25	U	25	50
11996	cis-1,3-Dichloropropene	10061-01-5	10	U	10	50
11996	trans-1,3-Dichloropropene	10061-02-6	10	U	10	50
11996	Ethylbenzene	100-41-4	25	U	25	50
11996	2-Hexanone	591-78-6	250	U	250	50
11996	4-Methyl-2-pentanone	108-10-1	250	U	250	50
11996	Methylene Chloride	75-09-2	25	U	25	50
11996	Styrene	100-42-5	25	U	25	50
11996	1,1,2,2-Tetrachloroethane	79-34-5	10	U	10	50
11996	Tetrachloroethene	127-18-4	10	U	10	50
11996	Toluene	108-88-3	10	U	10	50
11996	112Trichloro122Trifluoroethane	76-13-1	25	U	25	50
11996	1,1,1-Trichloroethane	71-55-6	25	U	25	50
11996	1,1,2-Trichloroethane	79-00-5	10	U	10	50
11996	**Trichloroethene**	79-01-6	**350**		10	50
11996	Trichlorofluoromethane	75-69-4	25	U	25	50
11996	Vinyl Acetate	108-05-4	25	U	25	50
11996	Vinyl Chloride	75-01-4	10	U	10	50
11996	m+p-Xylene	179601-23-1	25	U	25	50
11996	o-Xylene	95-47-6	25	U	25	50

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 14:51	Kerri E Legerlotz	5
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160421AA	02/11/2016 15:12	Kerri E Legerlotz	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 14:51	Kerri E Legerlotz	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160421AA	02/11/2016 15:12	Kerri E Legerlotz	50

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8232684
LL Group # 1629320
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 01/15/2016

The Boeing Company

Submitted: 02/05/2016 09:40
Reported: 02/16/2016 14:24

BOPTB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 11:48	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 11:48	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/16/2016 14:24

Group Number: 1629320

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: H160401AA	Sample number(s): 8232658,8232661-8232662,8232665-8232667,8232670,8232673,8232676-8232677		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H160421AA	Sample number(s): 8232658,8232678-8232680,8232683-8232684		
Acetone	5.0	U	5.0

*- 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: 02/16/2016 14:24

Group Number: 1629320

Analysis Name	Result		LOQ
	ug/l		ug/l
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H160461AA	Sample number(s): 8232677		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2

*- 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: 02/16/2016 14:24

Group Number: 1629320

Analysis Name	Result		LOQ
	ug/l		ug/l
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 160390003A	Sample number(s): 8232658,8232661-8232662,8232667,8232670,8232673,8232680		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 160360635002	Sample number(s): 8232659-8232660		
Iron	0.400	U	0.400
Batch number: 160360635003	Sample number(s): 8232663-8232664,8232668-8232669,8232671-8232672,8232674-8232675		
Iron	0.400	U	0.400
Batch number: 160390635001	Sample number(s): 8232681-8232682		
Iron	0.400	U	0.400
Batch number: 16036667901A	Sample number(s): 8232658,8232661-8232662,8232667,8232670,8232673,8232680		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16039049503B	Sample number(s): 8232658		
Total Organic Carbon	1.0	U	1.0
Batch number: 16039049504A	Sample number(s): 8232661-8232662,8232667,8232670,8232673,8232680		
Total Organic Carbon	1.0	U	1.0
Batch number: 16039133302A	Sample number(s): 8232658,8232662,8232667,8232670,8232673		
Sulfide	2.0	U	2.0
Batch number: 16042133301A	Sample number(s): 8232680		
Sulfide	2.0	U	2.0

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Quality Control Summary

Client Name: The Boeing Company
Reported: 02/16/2016 14:24

Group Number: 1629320

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: H160401AA	Sample number(s): 8232658,8232661-8232662,8232665-8232667,8232670,8232673,8232676-8232677								
Acetone	37.5	34.23	37.5	34.56	91	92	55-136	1	30
Benzene	5.00	5.26	5.00	5.03	105	101	80-120	5	30
Bromodichloromethane	5.00	5.38	5.00	5.18	108	104	80-120	4	30
Bromoform	5.00	5.33	5.00	4.92	107	98	64-134	8	30
Bromomethane	5.00	5.40	5.00	5.10	108	102	71-126	6	30
2-Butanone	37.5	33.49	37.5	36.27	89	97	66-135	8	30
Carbon Disulfide	5.00	5.05	5.00	4.85	101	97	70-128	4	30
Carbon Tetrachloride	5.00	5.82	5.00	5.41	116	108	79-129	7	30
Chlorobenzene	5.00	5.19	5.00	4.93	104	99	80-120	5	30
Chloroethane	5.00	5.21	5.00	5.07	104	101	71-122	3	30
Chloroform	5.00	5.29	5.00	5.10	106	102	80-120	4	30
Chloromethane	5.00	4.81	5.00	4.55	96	91	63-121	6	30
Dibromochloromethane	5.00	5.27	5.00	5.09	105	102	80-126	4	30
1,1-Dichloroethane	5.00	5.05	5.00	4.83	101	97	80-120	5	30
1,2-Dichloroethane	5.00	5.11	5.00	4.94	102	99	80-125	3	30
1,1-Dichloroethene	5.00	5.34	5.00	5.12	107	102	80-120	4	30
cis-1,2-Dichloroethene	5.00	5.29	5.00	5.09	106	102	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.43	5.00	5.23	109	105	80-120	4	30
1,2-Dichloropropane	5.00	5.32	5.00	5.16	106	103	80-120	3	30
cis-1,3-Dichloropropene	5.00	5.03	5.00	4.81	101	96	80-124	4	30
trans-1,3-Dichloropropene	5.00	5.01	5.00	4.86	100	97	76-132	3	30
Ethylbenzene	5.00	5.17	5.00	4.95	103	99	80-120	4	30
2-Hexanone	25	22.02	25	24.71	88	99	71-138	12	30
4-Methyl-2-pentanone	25	22.57	25	23.69	90	95	73-135	5	30
Methylene Chloride	5.00	5.12	5.00	4.96	102	99	80-120	3	30
Styrene	5.00	5.30	5.00	5.10	106	102	80-122	4	30
1,1,2,2-Tetrachloroethane	5.00	4.98	5.00	4.73	100	95	80-120	5	30
Tetrachloroethene	5.00	5.15	5.00	4.88	103	98	80-120	5	30
Toluene	5.00	5.06	5.00	4.88	101	98	80-120	4	30
112Trichloro122Trifluoroethane	5.00	5.54	5.00	5.44	111	109	75-120	2	30
1,1,1-Trichloroethane	5.00	5.54	5.00	5.28	111	106	80-120	5	30
1,1,2-Trichloroethane	5.00	4.96	5.00	4.91	99	98	80-120	1	30
Trichloroethene	5.00	5.54	5.00	5.28	111	106	80-120	5	30
Trichlorofluoromethane	5.00	5.56	5.00	5.30	111	106	69-133	5	30
Vinyl Acetate	12.5	12.9	12.5	12.93	103	103	10-183	0	30
Vinyl Chloride	5.00	5.12	5.00	4.84	102	97	71-123	6	30
m+p-Xylene	10	10.58	10	10.15	106	101	80-120	4	30
o-Xylene	5.00	5.19	5.00	4.99	104	100	80-120	4	30
Batch number: H160421AA	Sample number(s): 8232658,8232678-8232680,8232683-8232684								
Acetone	37.5	39.6	37.5	36.36	106	97	55-136	9	30
Benzene	5.00	5.24	5.00	5.04	105	101	80-120	4	30
Bromodichloromethane	5.00	5.41	5.00	5.24	108	105	80-120	3	30
Bromoform	5.00	4.98	5.00	5.06	100	101	64-134	2	30
Bromomethane	5.00	5.19	5.00	4.96	104	99	71-126	5	30
2-Butanone	37.5	41	37.5	34.27	109	91	66-135	18	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: 02/16/2016 14:24

Group Number: 1629320

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
Carbon Disulfide	5.00	4.99	5.00	4.80	100	96	70-128	4	30
Carbon Tetrachloride	5.00	5.79	5.00	5.55	116	111	79-129	4	30
Chlorobenzene	5.00	4.87	5.00	4.82	97	96	80-120	1	30
Chloroethane	5.00	5.11	5.00	4.74	102	95	71-122	8	30
Chloroform	5.00	5.29	5.00	5.14	106	103	80-120	3	30
Chloromethane	5.00	4.37	5.00	4.17	87	83	63-121	5	30
Dibromochloromethane	5.00	4.96	5.00	5.00	99	100	80-126	1	30
1,1-Dichloroethane	5.00	4.88	5.00	4.74	98	95	80-120	3	30
1,2-Dichloroethane	5.00	5.19	5.00	4.98	104	100	80-125	4	30
1,1-Dichloroethene	5.00	5.10	5.00	4.96	102	99	80-120	3	30
cis-1,2-Dichloroethene	5.00	5.31	5.00	5.17	106	103	80-120	3	30
trans-1,2-Dichloroethene	5.00	5.35	5.00	5.15	107	103	80-120	4	30
1,2-Dichloropropane	5.00	5.34	5.00	5.22	107	104	80-120	2	30
cis-1,3-Dichloropropene	5.00	5.07	5.00	4.98	101	100	80-124	2	30
trans-1,3-Dichloropropene	5.00	4.64	5.00	4.68	93	94	76-132	1	30
Ethylbenzene	5.00	4.76	5.00	4.72	95	94	80-120	1	30
2-Hexanone	25	27.77	25	22.37	111	89	71-138	22	30
4-Methyl-2-pentanone	25	27.84	25	21.77	111	87	73-135	24	30
Methylene Chloride	5.00	5.17	5.00	4.95	103	99	80-120	4	30
Styrene	5.00	5.02	5.00	4.96	100	99	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.38	5.00	4.60	88	92	80-120	5	30
Tetrachloroethene	5.00	4.66	5.00	4.59	93	92	80-120	1	30
Toluene	5.00	4.67	5.00	4.68	93	94	80-120	0	30
112Trichloro122Trifluoroethane	5.00	5.48	5.00	5.32	110	106	75-120	3	30
1,1,1-Trichloroethane	5.00	5.45	5.00	5.25	109	105	80-120	4	30
1,1,2-Trichloroethane	5.00	4.77	5.00	4.77	95	95	80-120	0	30
Trichloroethene	5.00	5.51	5.00	5.22	110	104	80-120	5	30
Trichlorofluoromethane	5.00	5.32	5.00	4.98	106	100	69-133	7	30
Vinyl Acetate	12.5	12.91	12.5	12.56	103	101	10-183	3	30
Vinyl Chloride	5.00	4.94	5.00	4.54	99	91	71-123	8	30
m+p-Xylene	10	9.81	10	9.67	98	97	80-120	1	30
o-Xylene	5.00	4.87	5.00	4.85	97	97	80-120	0	30
Batch number: H160461AA	Sample number(s): 8232677								
Acetone	37.5	37.6	37.5	32.95	100	88	65-124	13	30
Benzene	5.00	5.13	5.00	4.90	103	98	80-120	4	30
Bromodichloromethane	5.00	5.32	5.00	5.24	106	105	80-120	1	30
Bromoform	5.00	5.31	5.00	5.42	106	108	62-128	2	30
Bromomethane	5.00	4.62	5.00	4.44	92	89	71-126	4	30
2-Butanone	37.5	38.85	37.5	31.34	104	84	66-135	21	30
Carbon Disulfide	5.00	4.89	5.00	4.75	98	95	65-120	3	30
Carbon Tetrachloride	5.00	5.58	5.00	5.26	112	105	65-134	6	30
Chlorobenzene	5.00	4.80	5.00	4.75	96	95	80-120	1	30
Chloroethane	5.00	4.52	5.00	4.29	90	86	71-122	5	30
Chloroform	5.00	5.15	5.00	5.03	103	101	80-120	2	30
Chloromethane	5.00	3.81	5.00	3.63	76	73	63-121	5	30
Dibromochloromethane	5.00	5.24	5.00	5.23	105	105	68-131	0	30
1,1-Dichloroethane	5.00	4.80	5.00	4.66	96	93	75-120	3	30
1,2-Dichloroethane	5.00	5.23	5.00	5.07	105	101	72-127	3	30
1,1-Dichloroethene	5.00	4.97	5.00	4.85	99	97	70-120	2	30
cis-1,2-Dichloroethene	5.00	5.18	5.00	4.96	104	99	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.20	5.00	5.10	104	102	80-120	2	30
1,2-Dichloropropane	5.00	5.33	5.00	5.11	107	102	80-120	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: 02/16/2016 14:24

Group Number: 1629320

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					
cis-1,3-Dichloropropene	5.00	5.33	5.00	5.11	107	102	80-124	4	30
trans-1,3-Dichloropropene	5.00	5.03	5.00	5.07	101	101	77-121	1	30
Ethylbenzene	5.00	4.75	5.00	4.67	95	93	80-120	2	30
2-Hexanone	25	25.73	25	20.16	103	81	73-128	24	30
4-Methyl-2-pentanone	25	24.84	25	19.77	99	79	71-129	23	30
Methylene Chloride	5.00	5.14	5.00	5.05	103	101	80-120	2	30
Styrene	5.00	4.94	5.00	4.91	99	98	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.77	5.00	4.89	95	98	80-120	2	30
Tetrachloroethene	5.00	4.55	5.00	4.52	91	90	80-120	1	30
Toluene	5.00	4.67	5.00	4.63	93	93	80-120	1	30
112Trichloro122Trifluoroethane	5.00	5.29	5.00	5.07	106	101	75-120	4	30
1,1,1-Trichloroethane	5.00	5.19	5.00	5.01	104	100	70-124	3	30
1,1,2-Trichloroethane	5.00	4.97	5.00	5.03	99	101	80-120	1	30
Trichloroethene	5.00	5.25	5.00	5.06	105	101	80-120	4	30
Trichlorofluoromethane	5.00	4.88	5.00	4.57	98	91	64-133	7	30
Vinyl Acetate	12.5	12.2	12.5	12.02	98	96	40-185	2	30
Vinyl Chloride	5.00	4.27	5.00	3.99	85	80	62-128	7	30
m+p-Xylene	10	9.74	10	9.57	97	96	80-120	2	30
o-Xylene	5.00	4.84	5.00	4.74	97	95	80-120	2	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 160390003A	Sample number(s): 8232658,8232661-8232662,8232667,8232670,8232673,8232680								
Acetylene	51	53.9			106		79-126		
Ethane	59.2	60.06			101		85-115		
Ethene	60.4	61.25			101		83-115		
Methane	61.3	66.09			108		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 160360635002	Sample number(s): 8232659-8232660								
Iron	1.00	1.02			102		80-120		
Batch number: 160360635003	Sample number(s): 8232663-8232664,8232668-8232669,8232671-8232672,8232674-8232675								
Iron	1.00	0.966			97		80-120		
Batch number: 160390635001	Sample number(s): 8232681-8232682								
Iron	1.00	0.936			94		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16036667901A	Sample number(s): 8232658,8232661-8232662,8232667,8232670,8232673,8232680								
Nitrate Nitrogen	0.750	0.720			96		90-110		
Sulfate	7.50	7.37			98		90-110		
Batch number: 16039049503B	Sample number(s): 8232658								
Total Organic Carbon	25	25.11			100		91-113		
Batch number: 16039049504A	Sample number(s): 8232661-8232662,8232667,8232670,8232673,8232680								
Total Organic Carbon	25	24.78			99		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16039133302A	Sample number(s): 8232658,8232662,8232667,8232670,8232673								
Sulfide	20	19.07	20	19.07	95	95	80-120	0	4
Batch number: 16042133301A	Sample number(s): 8232680								

*- 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: 02/16/2016 14:24

Group Number: 1629320

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
Sulfide	20	19.47			97		80-120		

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: 160390003A	Sample number(s): 8232658,8232661-8232662,8232667,8232670,8232673,8232680 UNSPK: 8232658										
Acetylene	5.0	U	51	54.17	51	55.88	106	110	79-126	3	20
Ethane	5.0	U	59.2	58.69	59.2	57.16	99	97	74-131	3	30
Ethene	5.0	U	60.4	65.68	60.4	63.8	109	106	72-133	3	30
Methane	7.16		61.3	65.72	61.3	65	96	94	73-125	1	30
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 160360635002	Sample number(s): 8232659-8232660 UNSPK: P229066										
Iron	0.0530		1.00	1.03	1.00	1.00	98	95	75-125	3	20
Batch number: 160360635003	Sample number(s): 8232663-8232664,8232668-8232669,8232671-8232672,8232674-8232675 UNSPK: P230477										
Iron	0.178		1.00	1.14	1.00	1.13	97	96	75-125	1	20
Batch number: 160390635001	Sample number(s): 8232681-8232682 UNSPK: P230481										
Iron	0.129		1.00	1.07	1.00	1.10	94	97	75-125	3	20
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 16036667901A	Sample number(s): 8232658,8232661-8232662,8232667,8232670,8232673,8232680 UNSPK: P232717										
Nitrate Nitrogen	0.50	U	5.00	4.66			93		90-110		
Sulfate	42.63		50	89.86			94		90-110		
Batch number: 16039049503B	Sample number(s): 8232658 UNSPK: P231886										
Total Organic Carbon	4.28		10	13.95			97		91-113		
Batch number: 16039049504A	Sample number(s): 8232661-8232662,8232667,8232670,8232673,8232680 UNSPK: P232737										
Total Organic Carbon	20.59		10	26.1			55*		91-113		
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 16042133301A	Sample number(s): 8232680 UNSPK: P235451										
Sulfide	0.834		200	188.67	200	186.65	94	93	80-120	1	6

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: 02/16/2016 14:24

Group Number: 1629320

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 160360635002	Sample number(s): 8232659-8232660 BKG: P229066			
Iron	0.0530	0.0499	6 (1)	20
Batch number: 160360635003	Sample number(s): 8232663-8232664,8232668-8232669,8232671-8232672,8232674-8232675 BKG: P230477			
Iron	0.178	0.177	1 (1)	20
Batch number: 160390635001	Sample number(s): 8232681-8232682 BKG: P230481			
Iron	0.129	0.135	5 (1)	20
	mg/l	mg/l		
Batch number: 16036667901A	Sample number(s): 8232658,8232661-8232662,8232667,8232670,8232673,8232680 BKG: P232717			
Nitrate Nitrogen	0.50 U	0.50 U	0 (1)	15
Sulfate	42.63	43.05	1	15
Batch number: 16039049503B	Sample number(s): 8232658 BKG: P231886			
Total Organic Carbon	4.28	4.34	1 (1)	3
Batch number: 16039049504A	Sample number(s): 8232661-8232662,8232667,8232670,8232673,8232680 BKG: P232737			
Total Organic Carbon	20.59	20.43	1	3
	mg/l	mg/l		
Batch number: 16039133302A	Sample number(s): 8232658,8232662,8232667,8232670,8232673 BKG: P232680			
Sulfide	6.95	2.10	107* (1)	20
Batch number: 16042133301A	Sample number(s): 8232680 BKG: P235451			
Sulfide	0.834	40.0 U	0 (1)	20

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 Boeing 38
Batch number: H160401AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8232658	102	103	100	97
8232661	104	100	96	98
8232661DL	102	100	98	95
8232662	109	105	95	100
8232665	112	110	92	103
8232666	109	106	93	104
8232667	109	103	93	100
8232670	106	104	95	99
8232673	105	101	96	98
8232676	106	102	93	101
8232677	103	99	96	101
Blank	104	101	97	98
LCS	102	102	98	102
LCSD	102	97	98	101

*- Outside of specification
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Quality Control Summary

Client Name: The Boeing Company
Reported: 02/16/2016 14:24

Group Number: 1629320

Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H160421AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8232658DL	108	104	93	99
8232678	111	104	90	102
8232679	113	108	90	105
8232680	107	101	92	102
8232683	106	100	97	97
8232683DL	106	105	97	98
8232684	101	101	99	97
Blank	107	100	96	97
LCS	110	112	91	106
LCSD	107	102	93	103
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H160461AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8232677DL	108	110	94	102
Blank	99	103	101	97
LCS	109	112	93	107
LCSD	108	106	94	105
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 160390003A

	Propene
8232658	87
8232661	88
8232662	93
8232662DL	102
8232667	88
8232667DL	100
8232670	81
8232670DL	92
8232673	82
8232680	183*
8232680DL	101
8232680RE	179*
Blank	97
LCS	98
MS	88
MSD	91
Limits:	44-123

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Boeing Chain of Custody

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Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1629320 Sample # 8232658-84

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025.116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify):
Sampler: EMW / SMM # of Coolers: 3

(4) Analyses Requested

(5) Remarks/Comments

BOP-16i-0216
Metals QC per lab

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOC (38 List)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron				
E-4-0216	2/4/16	1410	H_2O	14	X	X	X	X	X	X	X	X				
BOP-07i-0216		1220		11	X	X	X		X	X						
BOP-16i-0216		1345		18	X	X	X	X	X	X	X	X				
BOP-78i-0216		0927		3	X											
BOP-79i-0216		0943		3	X											
BOP-81i-0216		1020		14	X	X	X	X	X	X	X	X				
BOP-82i-0216		1130		14	X	X	X	X	X	X	X	X				
BOP-83i-0216		1525		14	X	X	X	X	X	X	X	X				
BOP-84i-0216		0950		3	X											
BOP-85i-0216		0930		3	X											
BOP-86i-0216		0940		3	X											
BOP-87i-0216		0845		3	X											
BOP-88i-0216		0850		14	X	X	X	X	X	X	X	X				
BOP-X-0216		0800		3	X											
Trip Blanks	1/15/16	—		2	X											

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	2/4/16 1645		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 2-5-16 / 940

Relinquished by commercial carrier (circle): UPS FedEx Other:

Temperature upon Receipt: 1.1-2.1 °C

Custody Seals Intact?: Yes No

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.
Issued by Dept. 40 Management
7063.02

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 135469

Group Number(s): 1629320

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/05/2016 9:40
Number of Packages:	3	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 10:43 on 02/05/2016

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	2.0	DT	Wet	Y	Bagged	N
2	DT131	2.1	DT	Wet	Y	Bagged	N
3	DT131	1.1	DT	Wet	Y	Bagged	N

General Comments: BOP-16i-0216 rec'd 4 metals batch QC bottles.

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

1629320



LARRY STARKEY
(512) 232-9894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S

TRACKING #: 1Z RV3 069 Y0 4405 2106

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2016

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1629320


LARRY STARKEY
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EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801
40 LBS
RS
DWT: 25,14,14
SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946
PA 175 9-37
UPS NEXT DAY AIR
1 S
TRACKING #: 1Z RV3 069 Y0 4548 3096
BILLING: P/P
DESC: SAMPLING
RETURN SERVICE
REF-1:DEPT 40
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LD620D 63.0A 04/2015
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1629320


LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801
40 LBS
RS
DWT: 25,14,14
SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946
PA 175 9-37
UPS NEXT DAY AIR
TRACKING #: 1Z RV3 069 Y0 4497 9713
1 S
BILLING: P/P
DESC: SAMPLING
RETURN SERVICE
REF 1:DEPT 40
WS 17.0.31
LD620D 63 0A 04/2015

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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 ≥ 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:

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

Prepared for:

The Boeing Company

February 19, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 02/06/2016
Group Number: 1629541
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
TowerInf-0216 Water	8234010
TowerInf-0216 Total Metals Water	8234011
TowerInf-0216 Dissolved Metals Water	8234012
TowerInD-0216 Water	8234013
TowerEff-0216 Water	8234014
TowerEff-0216 Total Metals Water	8234015
TowerEff-0216 Dissolved Metals Water	8234016
TowerEfD-0216 Water	8234017
Trip Blank Water	8234018

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	Landau Associates	Attn: Dani Jorgensen
ELECTRONIC COPY TO	Landau	Attn: Brett Borgeson
ELECTRONIC COPY TO	Landau Associates	Attn: Terry McGourty
ELECTRONIC COPY TO	Landau	Attn: Chris Kimmel
ELECTRONIC COPY TO	Landau Associates	Attn: Anne Halvorsen

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1629541

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:

SW-846 6010C, Metals Dissolved
Batch #: 160410635002 (Sample number(s): 8234012 UNSPK: P232892 BKG: P232892)

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

EPA 376.1, Wet Chemistry
Batch #: 16039133302A (Sample number(s): 8234010, 8234014 BKG: P232680)

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

SM 4500-NH3 D-1997, Wet Chemistry
Batch #: 16041004201A (Sample number(s): 8234014 UNSPK: P233664 BKG: P233664)

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

Sample Description: TowerInf-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234010
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 09:15 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWIN

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.4**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**12**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00228	**Sulfate**	14808-79-8	**9.3**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Description: TowerInf-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234010
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 09:15 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWIN

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 19:15	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 19:15	Kerri E Legerlotz	1
00228	Sulfate	EPA 300.0	1	16037667131A	02/06/2016 16:00	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16042049501A	02/11/2016 04:58	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: TowerInf-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234011
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 09:15 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**1.54**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160390635001	02/10/2016 22:29	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: TowerInf-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234012
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 09:15 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
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CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

General Sample Comments

This sample was lab 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
01754	Iron	SW-846 6010C	1	160410635002	02/12/2016 00:32	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160410635002	02/11/2016 09:56	Christopher M Klumpp	1

Sample Description: TowerInD-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234013
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 09:25 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWID

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**12**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 19:36	Kerri E Legerlotz	1

Sample Description: TowerInD-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234013
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 09:25 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWID

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 19:36	Kerri E Legerlotz	1

Sample Description: TowerEff-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234014
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 08:50 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.5**		0.10	1
01506	Nitrite Nitrogen	14797-65-0	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**9.1**		1.0	1
	EPA 365.1		**mg/l**		**mg/l**	
00345	Total Phosphorus as PO4 water	14265-44-2	0.31	U	0.31	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Description: TowerEff-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234014
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 08:50 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 376.1**		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1
	SM 4500-NH3 D-1997		**mg/l**		**mg/l**	
12677	Ammonia-Nitrogen	7664-41-7	0.20	U	0.20	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160421AA	02/11/2016 19:56	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160421AA	02/11/2016 19:56	Kerri E Legerlotz	1
00368	Nitrate Nitrogen	EPA 300.0	1	16037667131A	02/06/2016 16:26	Drew M Gerhart	1
01506	Nitrite Nitrogen	EPA 300.0	1	16037667131A	02/06/2016 16:26	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16037667131A	02/06/2016 16:26	Drew M Gerhart	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	16041110101A	02/18/2016 09:08	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16042049501A	02/11/2016 05:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	16041110101A	02/10/2016 10:00	Barbara A Washington	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1
12677	Ammonia-Nitrogen	SM 4500-NH3 D-1997	1	16041004201A	02/10/2016 23:20	Michelle L Lalli	1

Sample Description: TowerEff-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234015
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 08:50 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160390635001	02/10/2016 22:38	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: TowerEff-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234016
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 08:50 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160390635001	02/10/2016 22:42	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: TowerEfD-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234017
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 09:00 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWED

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 10:39	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 10:39	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234018
LL Group # 1629541
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 01/15/2016

The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 09:41

TOWTB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 09:18	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 09:18	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/19/2016 09:41

Group Number: 1629541

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: H160421AA	Sample number(s): 8234010,8234013-8234014		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H160461AA	Sample number(s): 8234017-8234018		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 02/19/2016 09:41

Group Number: 1629541

Analysis Name	Result		LOQ
	ug/l		ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
	mg/l		mg/l
Batch number: 160390635001	Sample number(s): 8234011,8234015-8234016		
Iron	0.400	U	0.400
Batch number: 160410635002	Sample number(s): 8234012		
Iron	0.400	U	0.400
Batch number: 16037667131A	Sample number(s): 8234010,8234014		
Nitrate Nitrogen	0.10	U	0.10
Nitrite Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16041110101A	Sample number(s): 8234014		
Total Phosphorus as PO4 water	0.31	U	0.31
Batch number: 16042049501A	Sample number(s): 8234010,8234014		
Total Organic Carbon	1.0	U	1.0

*- 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: 02/19/2016 09:41

Group Number: 1629541

Analysis Name	Result		LOQ
	mg/l		mg/l
Batch number: 16039133302A	Sample number(s): 8234010,8234014		
Sulfide	2.0	U	2.0
Batch number: 16041004201A	Sample number(s): 8234014		
Ammonia-Nitrogen	0.20	U	0.20

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: H160421AA	Sample number(s): 8234010,8234013-8234014								
Acetone	37.5	39.6	37.5	36.36	106	97	55-136	9	30
Benzene	5.00	5.24	5.00	5.04	105	101	80-120	4	30
Bromodichloromethane	5.00	5.41	5.00	5.24	108	105	80-120	3	30
Bromoform	5.00	4.98	5.00	5.06	100	101	64-134	2	30
Bromomethane	5.00	5.19	5.00	4.96	104	99	71-126	5	30
2-Butanone	37.5	41	37.5	34.27	109	91	66-135	18	30
Carbon Disulfide	5.00	4.99	5.00	4.80	100	96	70-128	4	30
Carbon Tetrachloride	5.00	5.79	5.00	5.55	116	111	79-129	4	30
Chlorobenzene	5.00	4.87	5.00	4.82	97	96	80-120	1	30
Chloroethane	5.00	5.11	5.00	4.74	102	95	71-122	8	30
Chloroform	5.00	5.29	5.00	5.14	106	103	80-120	3	30
Chloromethane	5.00	4.37	5.00	4.17	87	83	63-121	5	30
Dibromochloromethane	5.00	4.96	5.00	5.00	99	100	80-126	1	30
1,1-Dichloroethane	5.00	4.88	5.00	4.74	98	95	80-120	3	30
1,2-Dichloroethane	5.00	5.19	5.00	4.98	104	100	80-125	4	30
1,1-Dichloroethene	5.00	5.10	5.00	4.96	102	99	80-120	3	30
cis-1,2-Dichloroethene	5.00	5.31	5.00	5.17	106	103	80-120	3	30
trans-1,2-Dichloroethene	5.00	5.35	5.00	5.15	107	103	80-120	4	30
1,2-Dichloropropane	5.00	5.34	5.00	5.22	107	104	80-120	2	30
cis-1,3-Dichloropropene	5.00	5.07	5.00	4.98	101	100	80-124	2	30
trans-1,3-Dichloropropene	5.00	4.64	5.00	4.68	93	94	76-132	1	30
Ethylbenzene	5.00	4.76	5.00	4.72	95	94	80-120	1	30
2-Hexanone	25	27.77	25	22.37	111	89	71-138	22	30
4-Methyl-2-pentanone	25	27.84	25	21.77	111	87	73-135	24	30
Methylene Chloride	5.00	5.17	5.00	4.95	103	99	80-120	4	30
Styrene	5.00	5.02	5.00	4.96	100	99	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.38	5.00	4.60	88	92	80-120	5	30
Tetrachloroethene	5.00	4.66	5.00	4.59	93	92	80-120	1	30
Toluene	5.00	4.67	5.00	4.68	93	94	80-120	0	30
112Trichloro122Trifluoroethane	5.00	5.48	5.00	5.32	110	106	75-120	3	30
1,1,1-Trichloroethane	5.00	5.45	5.00	5.25	109	105	80-120	4	30
1,1,2-Trichloroethane	5.00	4.77	5.00	4.77	95	95	80-120	0	30
Trichloroethene	5.00	5.51	5.00	5.22	110	104	80-120	5	30
Trichlorofluoromethane	5.00	5.32	5.00	4.98	106	100	69-133	7	30
Vinyl Acetate	12.5	12.91	12.5	12.56	103	101	10-183	3	30
Vinyl Chloride	5.00	4.94	5.00	4.54	99	91	71-123	8	30
m+p-Xylene	10	9.81	10	9.67	98	97	80-120	1	30
o-Xylene	5.00	4.87	5.00	4.85	97	97	80-120	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: 02/19/2016 09:41

Group Number: 1629541

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: H160461AA	Sample number(s): 8234017-8234018								
Acetone	37.5	37.6	37.5	32.95	100	88	65-124	13	30
Benzene	5.00	5.13	5.00	4.90	103	98	80-120	4	30
Bromodichloromethane	5.00	5.32	5.00	5.24	106	105	80-120	1	30
Bromoform	5.00	5.31	5.00	5.42	106	108	62-128	2	30
Bromomethane	5.00	4.62	5.00	4.44	92	89	71-126	4	30
2-Butanone	37.5	38.85	37.5	31.34	104	84	66-135	21	30
Carbon Disulfide	5.00	4.89	5.00	4.75	98	95	65-120	3	30
Carbon Tetrachloride	5.00	5.58	5.00	5.26	112	105	65-134	6	30
Chlorobenzene	5.00	4.80	5.00	4.75	96	95	80-120	1	30
Chloroethane	5.00	4.52	5.00	4.29	90	86	71-122	5	30
Chloroform	5.00	5.15	5.00	5.03	103	101	80-120	2	30
Chloromethane	5.00	3.81	5.00	3.63	76	73	63-121	5	30
Dibromochloromethane	5.00	5.24	5.00	5.23	105	105	68-131	0	30
1,1-Dichloroethane	5.00	4.80	5.00	4.66	96	93	75-120	3	30
1,2-Dichloroethane	5.00	5.23	5.00	5.07	105	101	72-127	3	30
1,1-Dichloroethene	5.00	4.97	5.00	4.85	99	97	70-120	2	30
cis-1,2-Dichloroethene	5.00	5.18	5.00	4.96	104	99	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.20	5.00	5.10	104	102	80-120	2	30
1,2-Dichloropropane	5.00	5.33	5.00	5.11	107	102	80-120	4	30
cis-1,3-Dichloropropene	5.00	5.33	5.00	5.11	107	102	80-124	4	30
trans-1,3-Dichloropropene	5.00	5.03	5.00	5.07	101	101	77-121	1	30
Ethylbenzene	5.00	4.75	5.00	4.67	95	93	80-120	2	30
2-Hexanone	25	25.73	25	20.16	103	81	73-128	24	30
4-Methyl-2-pentanone	25	24.84	25	19.77	99	79	71-129	23	30
Methylene Chloride	5.00	5.14	5.00	5.05	103	101	80-120	2	30
Styrene	5.00	4.94	5.00	4.91	99	98	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.77	5.00	4.89	95	98	80-120	2	30
Tetrachloroethene	5.00	4.55	5.00	4.52	91	90	80-120	1	30
Toluene	5.00	4.67	5.00	4.63	93	93	80-120	1	30
112Trichloro122Trifluoroethane	5.00	5.29	5.00	5.07	106	101	75-120	4	30
1,1,1-Trichloroethane	5.00	5.19	5.00	5.01	104	100	70-124	3	30
1,1,2-Trichloroethane	5.00	4.97	5.00	5.03	99	101	80-120	1	30
Trichloroethene	5.00	5.25	5.00	5.06	105	101	80-120	4	30
Trichlorofluoromethane	5.00	4.88	5.00	4.57	98	91	64-133	7	30
Vinyl Acetate	12.5	12.2	12.5	12.02	98	96	40-185	2	30
Vinyl Chloride	5.00	4.27	5.00	3.99	85	80	62-128	7	30
m+p-Xylene	10	9.74	10	9.57	97	96	80-120	2	30
o-Xylene	5.00	4.84	5.00	4.74	97	95	80-120	2	30
	mg/l	mg/l	mg/l	mg/l					
Batch number: 160390635001	Sample number(s): 8234011,8234015-8234016								
Iron	1.00	0.936			94		80-120		
Batch number: 160410635002	Sample number(s): 8234012								
Iron	1.00	1.03			103		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16037667131A	Sample number(s): 8234010,8234014								
Nitrate Nitrogen	0.750	0.759			101		90-110		
Nitrite Nitrogen	0.750	0.732			98		90-110		
Sulfate	7.50	7.47			100		90-110		

*- 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: 02/19/2016 09:41

Group Number: 1629541

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16041110101A	Sample number(s): 8234014								
Total Phosphorus as PO4 water	14.58	14.88			102		90-110		
Batch number: 16042049501A	Sample number(s): 8234010,8234014								
Total Organic Carbon	25	27.67			111		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16039133302A	Sample number(s): 8234010,8234014								
Sulfide	20	19.07	20	19.07	95	95	80-120	0	4
Batch number: 16041004201A	Sample number(s): 8234014								
Ammonia-Nitrogen	5.00	5.20			104		80-120		

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 160390635001	Sample number(s): 8234011,8234015-8234016 UNSPK: P230481									
Iron	0.129	1.00	1.07	1.00	1.10	94	97	75-125	3	20
Batch number: 160410635002	Sample number(s): 8234012 UNSPK: P232892									
Iron	29.73	1.00	30.86	1.00	31.8	113 (2)	208 (2)	75-125	3	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16037667131A	Sample number(s): 8234010,8234014 UNSPK: P233721									
Nitrate Nitrogen	7.37	5.00	12.24			97		90-110		
Nitrite Nitrogen	0.50 U	5.00	4.94			99		90-110		
Sulfate	91.51	50	145.61			108		90-110		
Batch number: 16041110101A	Sample number(s): 8234014 UNSPK: P233724									
Total Phosphorus as PO4 water	0.31 U	6.14	6.30			103		90-110		
Batch number: 16042049501A	Sample number(s): 8234010,8234014 UNSPK: P235451									
Total Organic Carbon	10.69	50	62.83			104		91-113		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16041004201A	Sample number(s): 8234014 UNSPK: P233664									
Ammonia-Nitrogen	0.20 U	5.00	4.45	5.00	5.71	89	114	80-120	25*	23

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	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: 02/19/2016 09:41

Group Number: 1629541

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 160390635001	Sample number(s): 8234011,8234015-8234016 BKG: P230481			
Iron	0.129	0.135	5 (1)	20
Batch number: 160410635002	Sample number(s): 8234012 BKG: P232892			
Iron	29.73	30.53	3	20
	mg/l	mg/l		
Batch number: 16037667131A	Sample number(s): 8234010,8234014 BKG: P233721			
Nitrate Nitrogen	7.37	7.53	2	15
Nitrite Nitrogen	0.50 U	0.50 U	0 (1)	15
Sulfate	91.51	91.84	0	15
Batch number: 16041110101A	Sample number(s): 8234014 BKG: P233724			
Total Phosphorus as PO4 water	0.31 U	0.31 U	0 (1)	4
Batch number: 16042049501A	Sample number(s): 8234010,8234014 BKG: P235451			
Total Organic Carbon	10.69	10.44	2 (1)	3
	mg/l	mg/l		
Batch number: 16039133302A	Sample number(s): 8234010,8234014 BKG: P232680			
Sulfide	6.95	2.10	107* (1)	20
Batch number: 16041004201A	Sample number(s): 8234014 BKG: P233664			
Ammonia-Nitrogen	0.20 U	0.20 U	0 (1)	20

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 Boeing 38
Batch number: H160421AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8234010	105	102	98	96
8234013	109	103	93	99
8234014	104	105	98	97
Blank	107	100	96	97
LCS	110	112	91	106
LCSD	107	102	93	103
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H160461AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8234017	102	104	101	98
8234018	103	108	100	98
Blank	99	103	101	97
LCS	109	112	93	107
LCSD	108	106	94	105

*- 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 Group Number: 1629541
Reported: 02/19/2016 09:41

Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1629511 Sample # 523610-18

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above + John Rusoff
Invoice To: [X] Boeing EHS [ ] Other (specify): ____
Sampler: EMW # of Coolers: 2

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) VOC (38 list)	TOC	Sulfate	Sulfide	Total Iron	Dissolved Iron	Total Phosphorous	Ammonia	Nitrite	Nitrate			(5) Remarks/Comments
~~EMW~~ TowerInf-0216	2/5/16	0915	H2O	10	X	X	X	X	X	X(1)							(1) TowerInf-0216 Dissolved Iron NOT field filtered. Please filter.
TowerInD-0216		0925		3	X												
TowerEff-0216		0950		16	X	X	X	X	X	X	X	X	X	X			
TowerEfD-0216		0900		3	X												
Trip Blanks	1/15/16	←	↓	2	X												

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: ____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	2/5/16 1600		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 2/6/16 920

Relinquished by commercial carrier (circle): UPS FedEx Other: ____
Temperature upon Receipt: 1.6-1.9 °C
Custody Seals Intact?: Yes No

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 135560

Group Number(s): 1629511

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/06/2016 9:20
Number of Packages:	2	Number of Projects:	3
State/Province of Origin:	OR		

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:	1
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:	Yes		

Unpacked by Jordan Woods (6698) at 09:59 on 02/06/2016

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	DT146	1.9	DT	Wet	Y	Bagged	N
2	DT146	1.6	DT	Wet	Y	Bagged	N

Container Quantity Discrepancy Details

Sample ID on COC	Container Qty. Received	Container Qty. on COC	Comments
Trip Blank	1	2	

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S

TRACKING #: 1Z RV3 069 Y0 4323 6688

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S

TRACKING #: 1Z RV3 069 Y0 4392 0616

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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RRD R 1114

G # 162911

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 ≥ 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:

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

Prepared for:

The Boeing Company

February 19, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 02/06/2016
Group Number: 1629542
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-2-0216 Water	8234019
E-2-0216 Total Metals Water	8234020
E-2-0216 Dissolved Metals Water	8234021
E-3-0216 Water	8234022
E-3-0216 Total Metals Water	8234023
E-3-0216 Dissolved Metals Water	8234024
E-12-0216 Water	8234025
E-15-0216 Water	8234026
DP1-0216 Water	8234027
BOP-10i-0216 Water	8234028
BOP-59i-0216 Water	8234029
BOP-Y-0216 Water	8234030
Trip Blank Water	8234031

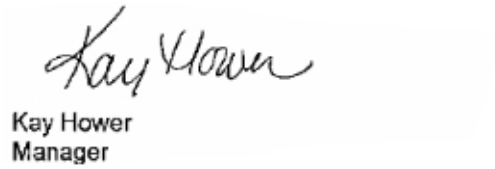
The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

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	Landau Associates	Attn: Dani Jorgensen
ELECTRONIC COPY TO	Landau	Attn: Brett Borgeson
ELECTRONIC COPY TO	Landau Associates	Attn: Terry McGourty
ELECTRONIC COPY TO	Landau	Attn: Chris Kimmel

ELECTRONIC COPY TO Landau Associates Attn: Anne Halvorsen

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1629542

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8234030

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

Sample #s: 8234027

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-methyl-2-pentanone and 2-hexanone.
The GC/MS volatile internal standard peak areas listed below are outside the acceptance criteria of -50% to +100% for the initial analysis.The re-analysis was performed using a vial with headspace and all internal standard peak areas were within the acceptance criteria.There were
no detects of any compounds that reference this internal standard.

Internal Standard - Initial Analysis	% Recovery
tert-Butyl Alcohol-d10	139

Batch #: H160491AA (Sample number(s): 8234027, 8234030)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 4-Methyl-2-pentanone, 2-Hexanone

EPA 376.1, Wet Chemistry

Batch #: 16039133302A (Sample number(s): 8234019, 8234022 BKG: P232680)

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

Sample Description: E-2-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234019
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 11:35 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOPE2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.1**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**23,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200

Sample Description: E-2-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234019
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 11:35 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOPE2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**26,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.12**		0.10	1
00228	**Sulfate**	14808-79-8	**4.2**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.0**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 11:19	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 11:19	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 20:49	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160390003A	02/09/2016 11:05	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16037667131A	02/06/2016 16:53	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16037667131A	02/06/2016 16:53	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16042049501A	02/11/2016 05:25	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: E-2-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234020
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 11:35 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**33.3**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160390635001	02/10/2016 22:45	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: E-2-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234021
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 11:35 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**14.6**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160390635001	02/10/2016 22:48	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: E-3-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234022
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 12:05 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOPE3

CAT No.	Analysis Name	CAS Number	Result			Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**			**ug/l**	
11996	Acetone	67-64-1	5.0	U		5.0	1
11996	Benzene	71-43-2	0.2	U		0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U		0.5	1
11996	Bromoform	75-25-2	0.5	U		0.5	1
11996	Bromomethane	74-83-9	0.5	U		0.5	1
11996	2-Butanone	78-93-3	5.0	U		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U		0.2	1
11996	Chlorobenzene	108-90-7	0.5	U		0.5	1
11996	Chloroethane	75-00-3	0.5	U		0.5	1
11996	Chloroform	67-66-3	0.2	U		0.2	1
11996	Chloromethane	74-87-3	0.5	U		0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U		0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U		0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.6**			0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.6**			0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U		0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U		0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U		0.2	1
11996	Ethylbenzene	100-41-4	0.5	U		0.5	1
11996	2-Hexanone	591-78-6	5.0	U		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U		5.0	1
11996	Methylene Chloride	75-09-2	0.5	U		0.5	1
11996	Styrene	100-42-5	0.5	U		0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U		0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U		0.2	1
11996	**Toluene**	108-88-3	**0.3**			0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U		0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U		0.2	1
11996	**Trichloroethene**	79-01-6	**1.2**			0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U		0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U		0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.5**			0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U		0.5	1
11996	o-Xylene	95-47-6	0.5	U		0.5	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	**24,000**		**E**	5.0	1
Trial ID: DL							
07105	Acetylene	74-86-2	1,000		U	1,000	200
07105	Ethane	74-84-0	1,000		U	1,000	200
07105	Ethene	74-85-1	1,000		U	1,000	200

Sample Description: E-3-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234022
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 12:05 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOPE3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**30,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	Sulfate	14808-79-8	1.0	U	1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**8.0**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 11:40	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 11:40	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 21:08	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160390003A	02/09/2016 11:24	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16037667131A	02/06/2016 17:19	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16037667131A	02/06/2016 17:19	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16042049501A	02/11/2016 05:39	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16039133302A	02/08/2016 21:35	Hannah M Royer	1

Sample Description: E-3-0216 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234023
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 12:05 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**16.1**	0.400	1

General Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	160390635001	02/10/2016 22:52	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: E-3-0216 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234024
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 12:05 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**16.9**	0.400	1

General Sample Comments

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
01754	Iron	SW-846 6010C	1	160390635001	02/10/2016 22:55	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	160390635001	02/09/2016 14:45	Barbara A Kane	1

Sample Description: E-12-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234025
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 12:45 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BPE12

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**16**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 12:00	Kerri E Legerlotz	1

Sample Description: E-12-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234025
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 12:45 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BPE12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 12:00	Kerri E Legerlotz	1

Sample Description: E-15-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234026
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 11:15 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BPE15

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.8**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**8.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.0**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**5.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**12,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

Sample Description: E-15-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234026
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 11:15 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BPE15

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**	**ug/l**	
07105	**Methane**	74-82-8	**15,000**	500	100
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10 U	0.10	1
00228	**Sulfate**	14808-79-8	**2.6**	1.0	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.3**	1.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 12:20	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 12:20	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160390003A	02/08/2016 21:26	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	160390003A	02/09/2016 11:42	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16037667131B	02/06/2016 17:46	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16037667131B	02/06/2016 17:46	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16042049501A	02/11/2016 06:07	James S Mathiot	1

Sample Description: DP1-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234027
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 10:05 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BPDP1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**100**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**1.1**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**13**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**32**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: DP1-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234027
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 10:05 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BPDP1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**74**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**9.2**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**22**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10
Trial ID: RE						
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**110**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**1.2**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1

Sample Description: DP1-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234027
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 10:05 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BPDP1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**14**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**35**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-methyl-2-pentanone and 2-hexanone.

The GC/MS volatile internal standard peak areas listed below are outside the acceptance criteria of -50% to +100% for the initial analysis.The re-analysis was performed using a vial with headspace and all internal standard peak areas were within the acceptance criteria.There were no detects of any compounds that reference this internal standard.

Internal Standard - Initial Analysis	% Recovery
tert-Butyl Alcohol-d10	139

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160491AA	02/18/2016 12:58	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H160491AA	02/18/2016 13:18	Kerri E Legerlotz	10
11996	8260C Boeing 38	SW-846 8260C	3-RE	H160491AA	02/18/2016 14:39	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160491AA	02/18/2016 12:58	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H160491AA	02/18/2016 13:18	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	3	H160491AA	02/18/2016 14:39	Kerri E Legerlotz	1

Sample Description: BOP-10i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234028
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 10:30 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOP10

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**16**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**7.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**13**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 12:41	Kerri E Legerlotz	1

Sample Description: BOP-10i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234028
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 10:30 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOP10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 12:41	Kerri E Legerlotz	1

Sample Description: BOP-59i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234029
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 10:20 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOP59

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**22**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.3**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**4.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 13:01	Kerri E Legerlotz	1

Sample Description: BOP-59i-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234029
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 10:20 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOP59

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 13:01	Kerri E Legerlotz	1

Sample Description: BOP-Y-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234030
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 08:00 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOP-Y

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**18**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**20**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.3**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**4.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

General Sample Comments

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

Sample Description: BOP-Y-0216 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234030
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 08:00 by EMW The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOP-Y

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H160491AA	02/18/2016 13:38	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160491AA	02/18/2016 13:38	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8234031
LL Group # 1629542
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 01/15/2016

The Boeing Company

Submitted: 02/06/2016 09:20
Reported: 02/19/2016 15:54

BOPT2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160461AA	02/15/2016 08:58	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160461AA	02/15/2016 08:58	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/19/2016 15:54

Group Number: 1629542

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: H160461AA	Sample number(s): 8234019,8234022,8234025-8234026,8234028-8234029,8234031		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H160491AA	Sample number(s): 8234027,8234030		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 02/19/2016 15:54

Group Number: 1629542

Analysis Name	Result		LOQ
	ug/l		ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 160390003A	Sample number(s): 8234019,8234022,8234026		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 160390635001	Sample number(s): 8234020-8234021,8234023-8234024		
Iron	0.400	U	0.400
Batch number: 16037667131A	Sample number(s): 8234019,8234022		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16037667131B	Sample number(s): 8234026		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0

*- 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: 02/19/2016 15:54

Group Number: 1629542

Analysis Name	Result		LOQ
	mg/l		mg/l
Batch number: 16042049501A	Sample number(s): 8234019,8234022,8234026		
Total Organic Carbon	1.0	U	1.0
Batch number: 16039133302A	Sample number(s): 8234019,8234022		
Sulfide	2.0	U	2.0

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: H160461AA	Sample number(s): 8234019,8234022,8234025-8234026,8234028-8234029,8234031								
Acetone	37.5	37.6	37.5	32.95	100	88	65-124	13	30
Benzene	5.00	5.13	5.00	4.90	103	98	80-120	4	30
Bromodichloromethane	5.00	5.32	5.00	5.24	106	105	80-120	1	30
Bromoform	5.00	5.31	5.00	5.42	106	108	62-128	2	30
Bromomethane	5.00	4.62	5.00	4.44	92	89	71-126	4	30
2-Butanone	37.5	38.85	37.5	31.34	104	84	66-135	21	30
Carbon Disulfide	5.00	4.89	5.00	4.75	98	95	65-120	3	30
Carbon Tetrachloride	5.00	5.58	5.00	5.26	112	105	65-134	6	30
Chlorobenzene	5.00	4.80	5.00	4.75	96	95	80-120	1	30
Chloroethane	5.00	4.52	5.00	4.29	90	86	71-122	5	30
Chloroform	5.00	5.15	5.00	5.03	103	101	80-120	2	30
Chloromethane	5.00	3.81	5.00	3.63	76	73	63-121	5	30
Dibromochloromethane	5.00	5.24	5.00	5.23	105	105	68-131	0	30
1,1-Dichloroethane	5.00	4.80	5.00	4.66	96	93	75-120	3	30
1,2-Dichloroethane	5.00	5.23	5.00	5.07	105	101	72-127	3	30
1,1-Dichloroethene	5.00	4.97	5.00	4.85	99	97	70-120	2	30
cis-1,2-Dichloroethene	5.00	5.18	5.00	4.96	104	99	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.20	5.00	5.10	104	102	80-120	2	30
1,2-Dichloropropane	5.00	5.33	5.00	5.11	107	102	80-120	4	30
cis-1,3-Dichloropropene	5.00	5.33	5.00	5.11	107	102	80-124	4	30
trans-1,3-Dichloropropene	5.00	5.03	5.00	5.07	101	101	77-121	1	30
Ethylbenzene	5.00	4.75	5.00	4.67	95	93	80-120	2	30
2-Hexanone	25	25.73	25	20.16	103	81	73-128	24	30
4-Methyl-2-pentanone	25	24.84	25	19.77	99	79	71-129	23	30
Methylene Chloride	5.00	5.14	5.00	5.05	103	101	80-120	2	30
Styrene	5.00	4.94	5.00	4.91	99	98	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.77	5.00	4.89	95	98	80-120	2	30
Tetrachloroethene	5.00	4.55	5.00	4.52	91	90	80-120	1	30
Toluene	5.00	4.67	5.00	4.63	93	93	80-120	1	30
112Trichloro122Trifluoroethane	5.00	5.29	5.00	5.07	106	101	75-120	4	30
1,1,1-Trichloroethane	5.00	5.19	5.00	5.01	104	100	70-124	3	30
1,1,2-Trichloroethane	5.00	4.97	5.00	5.03	99	101	80-120	1	30
Trichloroethene	5.00	5.25	5.00	5.06	105	101	80-120	4	30
Trichlorofluoromethane	5.00	4.88	5.00	4.57	98	91	64-133	7	30
Vinyl Acetate	12.5	12.2	12.5	12.02	98	96	40-185	2	30
Vinyl Chloride	5.00	4.27	5.00	3.99	85	80	62-128	7	30
m+p-Xylene	10	9.74	10	9.57	97	96	80-120	2	30
o-Xylene	5.00	4.84	5.00	4.74	97	95	80-120	2	30
Batch number: H160491AA	Sample number(s): 8234027,8234030								

*- 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: 02/19/2016 15:54

Group Number: 1629542

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					
Acetone	37.5	30.74	37.5	31.7	82	85	65-124	3	30
Benzene	5.00	4.89	5.00	4.68	98	94	80-120	4	30
Bromodichloromethane	5.00	5.20	5.00	5.06	104	101	80-120	3	30
Bromoform	5.00	5.53	5.00	5.51	111	110	62-128	0	30
Bromomethane	5.00	5.56	5.00	5.41	111	108	71-126	3	30
2-Butanone	37.5	27.93	37.5	28.39	74	76	66-135	2	30
Carbon Disulfide	5.00	4.54	5.00	4.30	91	86	65-120	5	30
Carbon Tetrachloride	5.00	5.59	5.00	5.17	112	103	65-134	8	30
Chlorobenzene	5.00	5.00	5.00	4.92	100	98	80-120	2	30
Chloroethane	5.00	5.56	5.00	5.38	111	108	71-122	3	30
Chloroform	5.00	5.08	5.00	4.84	102	97	80-120	5	30
Chloromethane	5.00	5.20	5.00	5.06	104	101	63-121	3	30
Dibromochloromethane	5.00	5.35	5.00	5.19	107	104	68-131	3	30
1,1-Dichloroethane	5.00	4.71	5.00	4.49	94	90	75-120	5	30
1,2-Dichloroethane	5.00	5.22	5.00	5.26	104	105	72-127	1	30
1,1-Dichloroethene	5.00	4.82	5.00	4.48	96	90	70-120	7	30
cis-1,2-Dichloroethene	5.00	4.93	5.00	4.81	99	96	80-120	2	30
trans-1,2-Dichloroethene	5.00	5.05	5.00	4.87	101	97	80-120	4	30
1,2-Dichloropropane	5.00	5.00	5.00	4.84	100	97	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.85	5.00	4.83	97	97	80-124	0	30
trans-1,3-Dichloropropene	5.00	5.15	5.00	5.10	103	102	77-121	1	30
Ethylbenzene	5.00	4.96	5.00	4.86	99	97	80-120	2	30
2-Hexanone	25	18.02	25	18.06	72*	72*	73-128	0	30
4-Methyl-2-pentanone	25	17.51	25	17.53	70*	70*	71-129	0	30
Methylene Chloride	5.00	4.82	5.00	4.75	96	95	80-120	1	30
Styrene	5.00	5.19	5.00	5.04	104	101	80-122	3	30
1,1,2,2-Tetrachloroethane	5.00	4.84	5.00	4.77	97	95	80-120	1	30
Tetrachloroethene	5.00	5.15	5.00	4.97	103	99	80-120	4	30
Toluene	5.00	4.92	5.00	4.81	98	96	80-120	2	30
112Trichloro122Trifluoroethane	5.00	4.96	5.00	4.69	99	94	75-120	6	30
1,1,1-Trichloroethane	5.00	5.14	5.00	4.89	103	98	70-124	5	30
1,1,2-Trichloroethane	5.00	5.02	5.00	4.99	100	100	80-120	1	30
Trichloroethene	5.00	5.21	5.00	5.04	104	101	80-120	3	30
Trichlorofluoromethane	5.00	5.69	5.00	5.50	114	110	64-133	3	30
Vinyl Acetate	12.5	11.52	12.5	10.27	92	82	40-185	11	30
Vinyl Chloride	5.00	5.54	5.00	5.26	111	105	62-128	5	30
m+p-Xylene	10	10.15	10	9.87	102	99	80-120	3	30
o-Xylene	5.00	4.93	5.00	4.88	99	98	80-120	1	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 160390003A	Sample number(s): 8234019,8234022,8234026								
Acetylene	51	53.9			106		79-126		
Ethane	59.2	60.06			101		85-115		
Ethene	60.4	61.25			101		83-115		
Methane	61.3	66.09			108		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 160390635001	Sample number(s): 8234020-8234021,8234023-8234024								
Iron	1.00	0.936			94		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16037667131A	Sample number(s): 8234019,8234022								

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

Client Name: The Boeing Company
Reported: 02/19/2016 15:54

Group Number: 1629542

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l					
Nitrate Nitrogen	0.750	0.759			101		90-110		
Sulfate	7.50	7.47			100		90-110		
Batch number: 16037667131B	Sample number(s): 8234026								
Nitrate Nitrogen	0.750	0.759			101		90-110		
Sulfate	7.50	7.47			100		90-110		
Batch number: 16042049501A	Sample number(s): 8234019,8234022,8234026								
Total Organic Carbon	25	27.67			111		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16039133302A	Sample number(s): 8234019,8234022								
Sulfide	20	19.07	20	19.07	95	95	80-120	0	4

MS/MSD

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

Analysis Name	Unspiked Conc		MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l		ug/l	ug/l	ug/l	ug/l					
Batch number: 160390003A	Sample number(s): 8234019,8234022,8234026 UNSPK: P232658										
Acetylene	5.0	U	51	54.17	51	55.88	106	110	79-126	3	20
Ethane	5.0	U	59.2	58.69	59.2	57.16	99	97	74-131	3	30
Ethene	5.0	U	60.4	65.68	60.4	63.8	109	106	72-133	3	30
Methane	7.16		61.3	65.72	61.3	65	96	94	73-125	1	30
	mg/l		mg/l	mg/l	mg/l	mg/l	mg/l				
Batch number: 160390635001	Sample number(s): 8234020-8234021,8234023-8234024 UNSPK: P230481										
Iron	0.129		1.00	1.07	1.00	1.10	94	97	75-125	3	20
	mg/l		mg/l	mg/l	mg/l	mg/l	mg/l				
Batch number: 16037667131A	Sample number(s): 8234019,8234022 UNSPK: P233721										
Nitrate Nitrogen	7.37		5.00	12.24			97		90-110		
Sulfate	91.51		50	145.61			108		90-110		
Batch number: 16037667131B	Sample number(s): 8234026 UNSPK: P233722										
Nitrate Nitrogen	6.83		5.00	11.79			99		90-110		
Sulfate	96.66		100	204.05			107		90-110		
Batch number: 16042049501A	Sample number(s): 8234019,8234022,8234026 UNSPK: P235451										
Total Organic Carbon	10.69		50	62.83			104		91-113		

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	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: 02/19/2016 15:54

Group Number: 1629542

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 160390635001	Sample number(s): 8234020-8234021,8234023-8234024 BKG: P230481			
Iron	0.129	0.135	5 (1)	20
	mg/l	mg/l		
Batch number: 16037667131A	Sample number(s): 8234019,8234022 BKG: P233721			
Nitrate Nitrogen	7.37	7.53	2	15
Sulfate	91.51	91.84	0	15
Batch number: 16037667131B	Sample number(s): 8234026 BKG: P233722			
Nitrate Nitrogen	6.83	6.85	0	15
Sulfate	96.66	96.4	0	15
Batch number: 16042049501A	Sample number(s): 8234019,8234022,8234026 BKG: P235451			
Total Organic Carbon	10.69	10.44	2 (1)	3
	mg/l	mg/l		
Batch number: 16039133302A	Sample number(s): 8234019,8234022 BKG: P232680			
Sulfide	6.95	2.10	107* (1)	20

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 Boeing 38
Batch number: H160461AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8234019	105	103	96	97
8234022	105	105	97	98
8234025	103	105	99	96
8234026	104	101	98	96
8234028	101	103	100	97
8234029	102	104	100	97
8234031	103	112	99	98
Blank	99	103	101	97
LCS	109	112	93	107
LCSD	108	106	94	105
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H160491AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8234027	100	102	100	98
8234027DL	102	102	100	98
8234027RE	103	104	99	98
8234030	102	101	101	97
Blank	101	103	100	96
LCS	102	102	98	103
LCSD	101	104	100	102

*- 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 Group Number: 1629542
Reported: 02/19/2016 15:54

Limits: 77-114 74-113 77-110 78-110

Analysis Name: AMEE by RSK-175
Batch number: 160390003A

	Propene
8234019	88
8234019DL	92
8234022	81
8234022DL	94
8234026	85
8234026DL	93
Blank	97
LCS	98
MS	88
MSD	91
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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1629542 Sample # 8234019-31

Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 2

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	4 Analyses Requested: VOC (38 List)	TOC	Sulfate	Sulfide	2. Nitrate	AMEF	Total Iron	Dissolved Iron					5 Remarks/Comments
E-2-0216	2/5/16	1135	H2O	14	X	X	X	X	X	X	X	X					
E-3-0216		1205		14	X	X	X	X	X	X	X	X					
E-12-0216		1245		3	X							X					
E-15-0216		1115		11	X	X	X		X	X							
~~DP1~~ DP1-0216		1005		3	X												
BDP-10i-0216		1030		3	X												
BDP-59i-0216		1020		3	X												
BDP-4-0216		0900		3	X												
Trip Blanks	1/15/16	—		2	X												

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	2/5/16 1600		7
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	2/6/16 920

Relinquished by commercial carrier (circle): UPS FedEx Other:_____

Temperature upon Receipt: 4.4-1.9 °C

Custody Seals Intact?: Yes No

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/06/2016 9:20
Number of Packages:	2	Number of Projects:	3
State/Province of Origin:	OR		

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:	1
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:	Yes		

Unpacked by Jordan Woods (6698) at 09:59 on 02/06/2016

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	DT146	1.9	DT	Wet	Y	Bagged	N
2	DT146	1.6	DT	Wet	Y	Bagged	N

Container Quantity Discrepancy Details

Sample ID on COC	Container Qty. Received	Container Qty. on COC	Comments
Trip Blank	1	2	

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S
TRACKING #: 1Z RV3 069 Y0 4323 6688

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S
TRACKING #: 1Z RV3 069 Y0 4392 0616

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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ECO # 1114

GA 162942

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 ≥ 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:

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

Prepared for:

The Boeing Company
PO Box 3707
Seattle WA 98124

February 23, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 02/06/2016
Group Number: 1629543
PO Number: 0025116.116.412
State of Sample Origin: OR

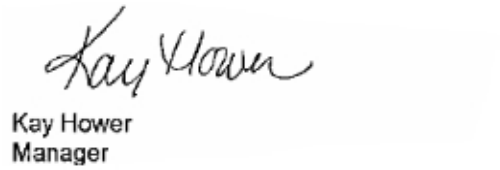
Client Sample Description	Lancaster Labs (LL) #
LA1-4-0216 Water	8234032
LA1-7-0216 Water	8234033

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	Landau Associates	Attn: Dani Jorgensen
ELECTRONIC COPY TO	Landau	Attn: Brett Borgeson
ELECTRONIC COPY TO	Landau Associates	Attn: Terry McGourty
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ELECTRONIC COPY TO	Landau Associates	Attn: Anne Halvorsen

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1629543

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8234032, 8234033

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

Batch #: H160491AA (Sample number(s): 8234032-8234033)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 4-Methyl-2-pentanone, 2-Hexanone

EPA 1664A, Wet Chemistry

Sample #s: 8234032

This sample was analyzed for SGT-HEM on 02/15/16. However, the Laboratory Control Standard (LCS) and the Laboratory Control Standard Duplicate (LCSD) were
out of specification yielding recoveries of 39% and 63%, respectively. The acceptance range for the LCS/LCSD is 64% to 114%. There is no additional sample
volume to repeat the analysis. The sample is being reported per client request.

Batch #: 16046807801A (Sample number(s): 8234032-8234033 UNSPK: 8234032)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: SGT-HEM (TPH)

The relative percent difference(s) for the following analyte(s) in the LCS/LCSD were outside acceptance windows: SGT-HEM (TPH)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: SGT-HEM (TPH)

Batch #: 16046807901A (Sample number(s): 8234032-8234033 UNSPK: 8234032)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: HEM (oil & grease)

Sample Description: LA1-4-0216 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8234032
LL Group # 1629543
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 14:20 by EMW

Submitted: 02/06/2016 09:20
Reported: 02/23/2016 14:28

The Boeing Company
PO Box 3707
Seattle WA 98124

LA1-4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	**Diesel/#2 Fuel w/Si Gel**	68334-30-5	**0.29**		0.096	1
12094	**DRO C12-C24 w/Si Gel**	n.a.	**0.25**		0.096	1
12094	**Motor Oil w/Si Gel**	n.a.	**0.57**		0.24	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	

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Analysis Report

Sample Description: LA1-4-0216 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8234032
LL Group # 1629543
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 14:20 by EMW

Submitted: 02/06/2016 09:20
Reported: 02/23/2016 14:28

The Boeing Company
PO Box 3707
Seattle WA 98124

LA1-4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.55**		0.10	1
00228	**Sulfate**	14808-79-8	**7.6**		1.0	1
	EPA 1664A		**mg/l**		**mg/l**	
08079	HEM (oil & grease)	n.a.	5.0	U	5.0	1
08078	SGT-HEM (TPH)	n.a.	5.0	U	5.0	1

This sample was analyzed for SGT-HEM on 02/15/16. However, the Laboratory Control Standard (LCS) and the Laboratory Control Standard Duplicate (LCSD) were out of specification yielding recoveries of 39% and 63%, respectively. The acceptance range for the LCS/LCSD is 64% to 114%. There is no additional sample volume to repeat the analysis. The sample is being reported per client request.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160491AA	02/18/2016 13:58	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160491AA	02/18/2016 13:58	Kerri E Legerlotz	1
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	160470013A	02/17/2016 23:53	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	160470013A	02/17/2016 09:00	David S Schrum	1
00368	Nitrate Nitrogen	EPA 300.0	1	16037667131B	02/06/2016 18:40	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16037667131B	02/06/2016 18:40	Drew M Gerhart	1
08079	HEM (oil & grease)	EPA 1664A	1	16046807901A	02/15/2016 21:30	Cassandra N Morgan	1
08078	SGT-HEM (TPH)	EPA 1664A	1	16046807801A	02/15/2016 21:35	Cassandra N Morgan	1

Sample Description: LA1-7-0216 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8234033
LL Group # 1629543
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 13:45 by EMW

Submitted: 02/06/2016 09:20
Reported: 02/23/2016 14:28

The Boeing Company
PO Box 3707
Seattle WA 98124

LA1-7

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.0**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**5.1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.096	U	0.096	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.096	U	0.096	1
12094	Motor Oil w/Si Gel	n.a.	0.24	U	0.24	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	

Sample Description: LA1-7-0216 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8234033
LL Group # 1629543
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 02/05/2016 13:45 by EMW

Submitted: 02/06/2016 09:20
Reported: 02/23/2016 14:28

The Boeing Company
PO Box 3707
Seattle WA 98124

LA1-7

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.9**		0.10	1
00228	**Sulfate**	14808-79-8	**16.0**		10.0	10
	EPA 1664A		**mg/l**		**mg/l**	
08079	HEM (oil & grease)	n.a.	5.0	U	5.0	1
08078	SGT-HEM (TPH)	n.a.	5.0	U	5.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160491AA	02/18/2016 14:19	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160491AA	02/18/2016 14:19	Kerri E Legerlotz	1
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	160470013A	02/18/2016 00:41	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	160470013A	02/17/2016 09:00	David S Schrum	1
00368	Nitrate Nitrogen	EPA 300.0	1	16037667131B	02/06/2016 19:06	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16037667131B	02/06/2016 19:20	Drew M Gerhart	10
08079	HEM (oil & grease)	EPA 1664A	2	16048807901A	02/17/2016 20:45	Cassandra N Morgan	1
08078	SGT-HEM (TPH)	EPA 1664A	2	16048807801A	02/17/2016 21:01	Cassandra N Morgan	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/23/2016 14:28

Group Number: 1629543

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: H160491AA	Sample number(s): 8234032-8234033		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
	mg/l		mg/l
Batch number: 160470013A	Sample number(s): 8234032-8234033		
Diesel/#2 Fuel w/Si Gel	0.10	U	0.10

*- 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: 02/23/2016 14:28

Group Number: 1629543

Analysis Name	Result		LOQ
	mg/l		mg/l
DRO C12-C24 w/Si Gel	0.10	U	0.10
Motor Oil w/Si Gel	0.25	U	0.25
Batch number: 16037667131B	Sample number(s): 8234032-8234033		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16046807801A	Sample number(s): 8234032		
SGT-HEM (TPH)	5.0	U	5.0
Batch number: 16046807901A	Sample number(s): 8234032		
HEM (oil & grease)	5.0	U	5.0
Batch number: 16048807801A	Sample number(s): 8234033		
SGT-HEM (TPH)	5.0	U	5.0
Batch number: 16048807901A	Sample number(s): 8234033		
HEM (oil & grease)	5.0	U	5.0

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: H160491AA	Sample number(s): 8234032-8234033								
Acetone	37.5	30.74	37.5	31.7	82	85	65-124	3	30
Benzene	5.00	4.89	5.00	4.68	98	94	80-120	4	30
Bromodichloromethane	5.00	5.20	5.00	5.06	104	101	80-120	3	30
Bromoform	5.00	5.53	5.00	5.51	111	110	62-128	0	30
Bromomethane	5.00	5.56	5.00	5.41	111	108	71-126	3	30
2-Butanone	37.5	27.93	37.5	28.39	74	76	66-135	2	30
Carbon Disulfide	5.00	4.54	5.00	4.30	91	86	65-120	5	30
Carbon Tetrachloride	5.00	5.59	5.00	5.17	112	103	65-134	8	30
Chlorobenzene	5.00	5.00	5.00	4.92	100	98	80-120	2	30
Chloroethane	5.00	5.56	5.00	5.38	111	108	71-122	3	30
Chloroform	5.00	5.08	5.00	4.84	102	97	80-120	5	30
Chloromethane	5.00	5.20	5.00	5.06	104	101	63-121	3	30
Dibromochloromethane	5.00	5.35	5.00	5.19	107	104	68-131	3	30
1,1-Dichloroethane	5.00	4.71	5.00	4.49	94	90	75-120	5	30
1,2-Dichloroethane	5.00	5.22	5.00	5.26	104	105	72-127	1	30
1,1-Dichloroethene	5.00	4.82	5.00	4.48	96	90	70-120	7	30
cis-1,2-Dichloroethene	5.00	4.93	5.00	4.81	99	96	80-120	2	30
trans-1,2-Dichloroethene	5.00	5.05	5.00	4.87	101	97	80-120	4	30
1,2-Dichloropropane	5.00	5.00	5.00	4.84	100	97	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.85	5.00	4.83	97	97	80-124	0	30
trans-1,3-Dichloropropene	5.00	5.15	5.00	5.10	103	102	77-121	1	30
Ethylbenzene	5.00	4.96	5.00	4.86	99	97	80-120	2	30
2-Hexanone	25	18.02	25	18.06	72*	72*	73-128	0	30
4-Methyl-2-pentanone	25	17.51	25	17.53	70*	70*	71-129	0	30
Methylene Chloride	5.00	4.82	5.00	4.75	96	95	80-120	1	30
Styrene	5.00	5.19	5.00	5.04	104	101	80-122	3	30
1,1,2,2-Tetrachloroethane	5.00	4.84	5.00	4.77	97	95	80-120	1	30
Tetrachloroethene	5.00	5.15	5.00	4.97	103	99	80-120	4	30
Toluene	5.00	4.92	5.00	4.81	98	96	80-120	2	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: 02/23/2016 14:28

Group Number: 1629543

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					
112Trichloro122Trifluoroethane	5.00	4.96	5.00	4.69	99	94	75-120	6	30
1,1,1-Trichloroethane	5.00	5.14	5.00	4.89	103	98	70-124	5	30
1,1,2-Trichloroethane	5.00	5.02	5.00	4.99	100	100	80-120	1	30
Trichloroethene	5.00	5.21	5.00	5.04	104	101	80-120	3	30
Trichlorofluoromethane	5.00	5.69	5.00	5.50	114	110	64-133	3	30
Vinyl Acetate	12.5	11.52	12.5	10.27	92	82	40-185	11	30
Vinyl Chloride	5.00	5.54	5.00	5.26	111	105	62-128	5	30
m+p-Xylene	10	10.15	10	9.87	102	99	80-120	3	30
o-Xylene	5.00	4.93	5.00	4.88	99	98	80-120	1	30
	mg/l	mg/l	mg/l	mg/l					
Batch number: 160470013A	Sample number(s): 8234032-8234033								
DRO C12-C24 w/Si Gel	0.800	0.518	0.800	0.523	65	65	60-120	1	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16037667131B	Sample number(s): 8234032-8234033								
Nitrate Nitrogen	0.750	0.759			101		90-110		
Sulfate	7.50	7.47			100		90-110		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16046807801A	Sample number(s): 8234032								
SGT-HEM (TPH)	20	7.80	20	12.5	39*	63*	64-114	46*	18
Batch number: 16046807901A	Sample number(s): 8234032								
HEM (oil & grease)	40	37.5	40	38.8	94	97	78-114	3	11
Batch number: 16048807801A	Sample number(s): 8234033								
SGT-HEM (TPH)	20	14.5	20	15.5	73	78	64-114	7	18
Batch number: 16048807901A	Sample number(s): 8234033								
HEM (oil & grease)	40	37.6	40	34.7	94	87	78-114	8	11

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16037667131B	Sample number(s): 8234032-8234033 UNSPK: P233722									
Nitrate Nitrogen	6.83	5.00	11.79			99		90-110		
Sulfate	96.66	100	204.05			107		90-110		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16046807801A	Sample number(s): 8234032 UNSPK: 8234032									
SGT-HEM (TPH)	5.0 U	21.5	12.26			57*		64-132		
Batch number: 16046807901A	Sample number(s): 8234032 UNSPK: 8234032									
HEM (oil & grease)	5.0 U	43	28.17			66*		78-114		
Batch number: 16048807801A	Sample number(s): 8234033 UNSPK: P237523									

*- 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: 02/23/2016 14:28

Group Number: 1629543

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
SGT-HEM (TPH)	2.21	20.8	18.44			78		64-132		
Batch number: 16048807901A	Sample number(s): 8234033 UNSPK: P237523									
HEM (oil & grease)	1.47	41.7	39.48			91		78-114		

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: 16037667131B	Sample number(s): 8234032-8234033 BKG: P233722			
Nitrate Nitrogen	6.83	6.85	0	15
Sulfate	96.66	96.4	0	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 Boeing 38
Batch number: H160491AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8234032	100	102	100	98
8234033	103	105	98	98
Blank	101	103	100	96
LCS	102	102	98	103
LCSD	101	104	100	102
Limits:	77-114	74-113	77-110	78-110

Analysis Name: NWTPH-Dx Water w/ Silica Gel
Batch number: 160470013A

	Chlorobenzene	Orthoterphenyl
8234032	82	95
8234033	75	70
Blank	75	79
LCS	77	91
LCSD	80	92
Limits:	50-150	50-150

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1629513 Sample # 823032-33

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025118, 116, 412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): _____
Sampler: EMW # of Coolers: 2

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) VOC (38 List)	TPH-Dx	FOG	Sulfate	Nitrate	(5) Remarks/Comments
LA1-4-0216	2/5/16	1420	H_2O	11	X	X	X	X	X	
LA1-7-0216	↓	1345	↓	11	X	X	X	X	X	
Trip Blanks	1/15/16	—	↓	2	X					

(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
E. Kimmel	2/5/16 1600		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 2/6/16 920

Relinquished by commercial carrier (circle): (UPS) FedEx Other: _____
Temperature upon Receipt: 1.6-1.9 °C
Custody Seals Intact?: (Yes) No

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.
Issued by Dept. 40 Management
7063.02

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/06/2016 9:20
Number of Packages:	2	Number of Projects:	3
State/Province of Origin:	OR		

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:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	Yes		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Jordan Woods (6698) at 09:59 on 02/06/2016

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	DT146	1.9	DT	Wet	Y	Bagged	N
2	DT146	1.6	DT	Wet	Y	Bagged	N

Missing Sample Details

Sample ID on COC	Comments
Trip Blank	

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com



LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR
TRACKING #: 1Z RV3 069 Y0 4323 6688

1 S

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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SED-R 1114



LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR
TRACKING #: 1Z RV3 069 Y0 4392 0616

1 S

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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SED-R 1114

GF 1629543

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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 ≥ 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:

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

Prepared for:

The Boeing Company

February 23, 2016

Project: Boeing of Portland 025116.115.412 TGA

Submittal Date: 02/17/2016
Group Number: 1632274
PO Number: 0025116.615.640
State of Sample Origin: OR

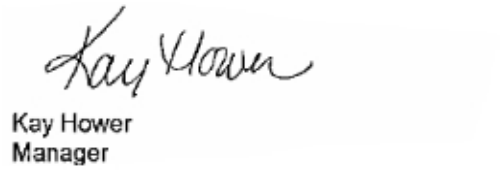
Client Sample Description	Lancaster Labs (LL) #
TowerInf-021616 Water	8246308
TowerEff-021616 Water	8246309
Trip Blank Water	8246310

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	Landau	Attn: Brett Borgeson
ELECTRONIC COPY TO	Landau Associates	Attn: Terry McGourty
ELECTRONIC COPY TO	Landau	Attn: Chris Kimmel
ELECTRONIC COPY TO	Landau Associates	Attn: Anne Halvorsen

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Boeing of Portland 025116.115.412 TGA
LL Group #: 1632274

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8246308, 8246309, 8246310

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-21
4-methyl-2-pentanone	-22
2-butanone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Description: TowerInf-021616 Water
Boeing Portland 0025116.115.412/TSA

LL Sample # WW 8246308
LL Group # 1632274
Account # 13419

Project Name: Boeing of Portland 025116.115.412 TGA

Collected: 02/16/2016 13:50 by EMW The Boeing Company

Submitted: 02/17/2016 10:00
Reported: 02/23/2016 15:36

TOW-I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.8**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**10**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-21
4-methyl-2-pentanone	-22
2-butanone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: TowerInf-021616 Water
Boeing Portland 0025116.115.412/TSA

LL Sample # WW 8246308
LL Group # 1632274
Account # 13419

Project Name: Boeing of Portland 025116.115.412 TGA

Collected: 02/16/2016 13:50 by EMW The Boeing Company

Submitted: 02/17/2016 10:00
Reported: 02/23/2016 15:36

TOW-I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160502AA	02/19/2016 16:01	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160502AA	02/19/2016 16:01	Kerri E Legerlotz	1

Sample Description: TowerEff-021616 Water
Boeing Portland 0025116.115.412/TSA

LL Sample # WW 8246309
LL Group # 1632274
Account # 13419

Project Name: Boeing of Portland 025116.115.412 TGA

Collected: 02/16/2016 14:05 by EMW The Boeing Company

Submitted: 02/17/2016 10:00
Reported: 02/23/2016 15:36

TOW-E

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-21
4-methyl-2-pentanone	-22
2-butanone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: TowerEff-021616 Water
Boeing Portland 0025116.115.412/TSA

LL Sample # WW 8246309
LL Group # 1632274
Account # 13419

Project Name: Boeing of Portland 025116.115.412 TGA

Collected: 02/16/2016 14:05 by EMW The Boeing Company

Submitted: 02/17/2016 10:00
Reported: 02/23/2016 15:36

TOW-E

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160502AA	02/19/2016 16:21	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160502AA	02/19/2016 16:21	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.115.412/TSA

LL Sample # WW 8246310
LL Group # 1632274
Account # 13419

Project Name: Boeing of Portland 025116.115.412 TGA

Collected: 01/15/2016 The Boeing Company

Submitted: 02/17/2016 10:00
Reported: 02/23/2016 15:36

TOW-T

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-21
4-methyl-2-pentanone	-22
2-butanone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: Trip Blank Water
Boeing Portland 0025116.115.412/TSA

LL Sample # WW 8246310
LL Group # 1632274
Account # 13419

Project Name: Boeing of Portland 025116.115.412 TGA

Collected: 01/15/2016

The Boeing Company

Submitted: 02/17/2016 10:00
Reported: 02/23/2016 15:36

TOW-T

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160502AA	02/19/2016 15:41	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160502AA	02/19/2016 15:41	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/23/2016 15:36

Group Number: 1632274

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: H160502AA	Sample number(s): 8246308-8246310		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

*- 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: 02/23/2016 15:36

Group Number: 1632274

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: H160502AA	Sample number(s): 8246308-8246310								
Acetone	37.5	32.42	37.5	30.4	86	81	65-124	6	30
Benzene	5.00	4.89	5.00	4.53	98	91	80-120	8	30
Bromodichloromethane	5.00	5.36	5.00	4.91	107	98	80-120	9	30
Bromoform	5.00	5.49	5.00	5.56	110	111	62-128	1	30
Bromomethane	5.00	5.37	5.00	5.24	107	105	71-126	2	30
2-Butanone	37.5	31.38	37.5	29.39	84	78	66-135	7	30
Carbon Disulfide	5.00	4.25	5.00	3.89	85	78	65-120	9	30
Carbon Tetrachloride	5.00	5.51	5.00	5.01	110	100	65-134	9	30
Chlorobenzene	5.00	4.94	5.00	4.77	99	95	80-120	4	30
Chloroethane	5.00	5.20	5.00	5.12	104	102	71-122	2	30
Chloroform	5.00	5.11	5.00	4.76	102	95	80-120	7	30
Chloromethane	5.00	4.88	5.00	4.87	98	97	63-121	0	30
Dibromochloromethane	5.00	5.20	5.00	5.10	104	102	68-131	2	30
1,1-Dichloroethane	5.00	4.73	5.00	4.41	95	88	75-120	7	30
1,2-Dichloroethane	5.00	5.42	5.00	5.07	108	101	72-127	7	30
1,1-Dichloroethene	5.00	4.53	5.00	4.26	91	85	70-120	6	30
cis-1,2-Dichloroethene	5.00	4.92	5.00	4.60	98	92	80-120	7	30
trans-1,2-Dichloroethene	5.00	4.92	5.00	4.64	98	93	80-120	6	30
1,2-Dichloropropane	5.00	5.10	5.00	4.83	102	97	80-120	5	30
cis-1,3-Dichloropropene	5.00	4.98	5.00	4.65	100	93	80-124	7	30
trans-1,3-Dichloropropene	5.00	4.90	5.00	4.93	98	99	77-121	1	30
Ethylbenzene	5.00	4.88	5.00	4.73	98	95	80-120	3	30
2-Hexanone	25	20.36	25	18.69	81	75	73-128	9	30
4-Methyl-2-pentanone	25	19.72	25	17.95	79	72	71-129	9	30
Methylene Chloride	5.00	4.86	5.00	4.63	97	93	80-120	5	30
Styrene	5.00	5.10	5.00	4.96	102	99	80-122	3	30
1,1,2,2-Tetrachloroethane	5.00	4.55	5.00	4.60	91	92	80-120	1	30
Tetrachloroethene	5.00	4.77	5.00	4.64	95	93	80-120	3	30
Toluene	5.00	4.67	5.00	4.62	93	92	80-120	1	30
112Trichloro122Trifluoroethane	5.00	4.83	5.00	4.42	97	88	75-120	9	30
1,1,1-Trichloroethane	5.00	5.09	5.00	4.78	102	96	70-124	6	30
1,1,2-Trichloroethane	5.00	4.95	5.00	4.94	99	99	80-120	0	30
Trichloroethene	5.00	5.23	5.00	4.89	105	98	80-120	7	30
Trichlorofluoromethane	5.00	5.44	5.00	5.35	109	107	64-133	2	30
Vinyl Acetate	12.5	12.66	12.5	12.12	101	97	40-185	4	30
Vinyl Chloride	5.00	5.15	5.00	5.00	103	100	62-128	3	30
m+p-Xylene	10	9.86	10	9.68	99	97	80-120	2	30
o-Xylene	5.00	4.88	5.00	4.67	98	93	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
Group Number: 1632274
Reported: 02/23/2016 15:36

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 Boeing 38
Batch number: H160502AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8246308	108	110	94	99
8246309	109	108	95	97
8246310	103	107	98	97
Blank	102	106	99	96
LCS	105	107	95	103
LCSD	100	100	99	103
Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1632274 Sample # 8246308-10

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (39 list)	(5) Remarks/Comments
Tower Inf-021616	2/16/16	1350	H_2O	3	X	
Tower Eff-021616	2/16/16	1405	H_2O	3	X	
Trip Blanks	1/15/16	—	H_2O	2	X	

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
E Wankel	2/16/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 2-17-16 / 1000

Relinquished by commercial carrier (circle): UPS FedEx Other:

Temperature upon Receipt: 1.3 °C

Custody Seals Intact?: Yes No

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
Issued by Dept. 40 Management
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.
7063.02

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 136616

Group Number(s): 1632274

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	02/17/2016 10:00
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 10:29 on 02/17/2016

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	1.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company
PO Box 3707
Seattle WA 98124

Report Date: March 10, 2016

Project: Boeing of Portland 025116.116.412

Submittal Date: 02/27/2016
Group Number: 1635540
PO Number: 025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-16-0216 Water	8262540
Trip Blank Water	8262541

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	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel
Electronic Copy To	Landau Associates	Attn: Anne Halvorsen

Respectfully Submitted,

Kay Hower

Kay Hower
Manager

(510) 672-3979

Project Name: Boeing of Portland 025116.116.412
LL Group #: 1635540

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8262540

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

RSKSOP-175 modified, GC Miscellaneous

Batch #: 160640008A (Sample number(s): 8262540 UNSPK: 8262540)

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

Sample Description: E-16-0216 Water
Boeing Portland 025116.116.412

LL Sample # WW 8262540
LL Group # 1635540
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 02/26/2016 10:45 by EMW

Submitted: 02/27/2016 09:00
Reported: 03/10/2016 12:14

The Boeing Company
PO Box 3707
Seattle WA 98124

PTE16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.9**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**1.5**		0.2	1
11996	**Toluene**	108-88-3	**4.0**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**6.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: E-16-0216 Water
Boeing Portland 025116.116.412

LL Sample # WW 8262540
LL Group # 1635540
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 02/26/2016 10:45 by EMW

Submitted: 02/27/2016 09:00
Reported: 03/10/2016 12:14

The Boeing Company
PO Box 3707
Seattle WA 98124

PTE16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
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	**460**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.1**		0.10	1
00228	**Sulfate**	14808-79-8	**6.9**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160621AA	03/02/2016 14:13	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160621AA	03/02/2016 14:13	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	160640008A	03/04/2016 14:17	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16058667601A	02/27/2016 11:54	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16058667601A	02/27/2016 11:54	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16062049502A	03/02/2016 04:10	James S Mathiot	1

Sample Description: Trip Blank Water
Boeing Portland 025116.116.412

LL Sample # WW 8262541
LL Group # 1635540
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 01/15/2016

Submitted: 02/27/2016 09:00
Reported: 03/10/2016 12:14

The Boeing Company
PO Box 3707
Seattle WA 98124

PT-TB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160611AA	03/01/2016 13:07	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160611AA	03/01/2016 13:07	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 03/10/2016 12:14

Group Number: 1635540

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: H160611AA	Sample number(s): 8262541		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H160621AA	Sample number(s): 8262540		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 03/10/2016 12:14

Group Number: 1635540

Analysis Name	Result		LOQ
	ug/l		ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 160640008A	Sample number(s): 8262540		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 16058667601A	Sample number(s): 8262540		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16062049502A	Sample number(s): 8262540		
Total Organic Carbon	1.0	U	1.0

*- 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: 03/10/2016 12:14

Group Number: 1635540

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: H160611AA	Sample number(s): 8262541								
Acetone	37.5	35.42	37.5	37.41	94	100	65-124	5	30
Benzene	5.00	4.86	5.00	4.69	97	94	80-120	4	30
Bromodichloromethane	5.00	5.12	5.00	4.98	102	100	80-120	3	30
Bromoform	5.00	5.19	5.00	5.25	104	105	62-128	1	30
Bromomethane	5.00	4.76	5.00	4.58	95	92	71-126	4	30
2-Butanone	37.5	32.41	37.5	34.52	86	92	66-135	6	30
Carbon Disulfide	5.00	4.11	5.00	3.93	82	79	65-120	4	30
Carbon Tetrachloride	5.00	5.00	5.00	4.82	100	96	65-134	4	30
Chlorobenzene	5.00	4.70	5.00	4.70	94	94	80-120	0	30
Chloroethane	5.00	4.77	5.00	4.61	95	92	71-122	3	30
Chloroform	5.00	4.83	5.00	4.71	97	94	80-120	3	30
Chloromethane	5.00	4.68	5.00	4.55	94	91	63-121	3	30
Dibromochloromethane	5.00	5.03	5.00	5.09	101	102	68-131	1	30
1,1-Dichloroethane	5.00	4.72	5.00	4.51	94	90	75-120	5	30
1,2-Dichloroethane	5.00	4.85	5.00	4.76	97	95	72-127	2	30
1,1-Dichloroethene	5.00	4.75	5.00	4.55	95	91	70-120	4	30
cis-1,2-Dichloroethene	5.00	4.94	5.00	4.75	99	95	80-120	4	30
trans-1,2-Dichloroethene	5.00	4.96	5.00	4.73	99	95	80-120	5	30
1,2-Dichloropropane	5.00	5.11	5.00	4.95	102	99	80-120	3	30
cis-1,3-Dichloropropene	5.00	5.15	5.00	5.07	103	101	80-124	2	30
trans-1,3-Dichloropropene	5.00	5.10	5.00	5.09	102	102	77-121	0	30
Ethylbenzene	5.00	4.72	5.00	4.64	94	93	80-120	2	30
2-Hexanone	25	20.77	25	22.61	83	90	73-128	8	30
4-Methyl-2-pentanone	25	20.68	25	22.56	83	90	71-129	9	30
Methylene Chloride	5.00	4.63	5.00	4.49	93	90	80-120	3	30
Styrene	5.00	4.97	5.00	4.97	99	99	80-122	0	30
1,1,2,2-Tetrachloroethane	5.00	5.00	5.00	4.90	100	98	80-120	2	30
Tetrachloroethene	5.00	4.73	5.00	4.62	95	92	80-120	2	30
Toluene	5.00	4.65	5.00	4.63	93	93	80-120	0	30
112Trichloro122Trifluoroethane	5.00	4.85	5.00	4.63	97	93	75-120	5	30
1,1,1-Trichloroethane	5.00	4.75	5.00	4.63	95	93	70-124	3	30
1,1,2-Trichloroethane	5.00	4.81	5.00	4.85	96	97	80-120	1	30
Trichloroethene	5.00	4.78	5.00	4.66	96	93	80-120	2	30
Trichlorofluoromethane	5.00	4.95	5.00	4.67	99	93	64-133	6	30
Vinyl Acetate	12.5	13.78	12.5	13.65	110	109	40-185	1	30
Vinyl Chloride	5.00	4.77	5.00	4.57	95	91	62-128	4	30
m+p-Xylene	10	9.54	10	9.50	95	95	80-120	0	30
o-Xylene	5.00	4.75	5.00	4.62	95	92	80-120	3	30
Batch number: H160621AA	Sample number(s): 8262540								
Acetone	37.5	35.19	37.5	40.53	94	108	65-124	14	30
Benzene	5.00	4.71	5.00	4.63	94	93	80-120	2	30
Bromodichloromethane	5.00	5.09	5.00	5.13	102	103	80-120	1	30
Bromoform	5.00	5.03	5.00	5.63	101	113	62-128	11	30
Bromomethane	5.00	4.58	5.00	4.43	92	89	71-126	3	30
2-Butanone	37.5	34.46	37.5	40.44	92	108	66-135	16	30
Carbon Disulfide	5.00	3.84	5.00	3.73	77	75	65-120	3	30
Carbon Tetrachloride	5.00	4.79	5.00	4.72	96	94	65-134	1	30
Chlorobenzene	5.00	4.49	5.00	4.70	90	94	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: 03/10/2016 12:14

Group Number: 1635540

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					
Chloroethane	5.00	4.53	5.00	4.48	91	90	71-122	1	30
Chloroform	5.00	4.73	5.00	4.68	95	94	80-120	1	30
Chloromethane	5.00	4.30	5.00	4.16	86	83	63-121	3	30
Dibromochloromethane	5.00	4.85	5.00	5.19	97	104	68-131	7	30
1,1-Dichloroethane	5.00	4.45	5.00	4.43	89	89	75-120	0	30
1,2-Dichloroethane	5.00	4.67	5.00	4.76	93	95	72-127	2	30
1,1-Dichloroethene	5.00	4.31	5.00	4.25	86	85	70-120	1	30
cis-1,2-Dichloroethene	5.00	4.77	5.00	4.66	95	93	80-120	2	30
trans-1,2-Dichloroethene	5.00	4.61	5.00	4.60	92	92	80-120	0	30
1,2-Dichloropropane	5.00	4.96	5.00	4.90	99	98	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.05	5.00	5.08	101	102	80-124	0	30
trans-1,3-Dichloropropene	5.00	4.78	5.00	5.03	96	101	77-121	5	30
Ethylbenzene	5.00	4.41	5.00	4.63	88	93	80-120	5	30
2-Hexanone	25	23.28	25	28.06	93	112	73-128	19	30
4-Methyl-2-pentanone	25	23.31	25	27.78	93	111	71-129	18	30
Methylene Chloride	5.00	4.46	5.00	4.38	89	88	80-120	2	30
Styrene	5.00	4.79	5.00	5.02	96	100	80-122	5	30
1,1,2,2-Tetrachloroethane	5.00	4.60	5.00	5.21	92	104	80-120	12	30
Tetrachloroethene	5.00	4.41	5.00	4.64	88	93	80-120	5	30
Toluene	5.00	4.36	5.00	4.58	87	92	80-120	5	30
112Trichloro122Trifluoroethane	5.00	4.41	5.00	4.31	88	86	75-120	2	30
1,1,1-Trichloroethane	5.00	4.65	5.00	4.52	93	90	70-124	3	30
1,1,2-Trichloroethane	5.00	4.68	5.00	4.98	94	100	80-120	6	30
Trichloroethene	5.00	4.69	5.00	4.58	94	92	80-120	3	30
Trichlorofluoromethane	5.00	4.53	5.00	4.61	91	92	64-133	2	30
Vinyl Acetate	12.5	12.98	12.5	12.84	104	103	40-185	1	30
Vinyl Chloride	5.00	4.44	5.00	4.33	89	87	62-128	3	30
m+p-Xylene	10	9.00	10	9.51	90	95	80-120	6	30
o-Xylene	5.00	4.48	5.00	4.71	90	94	80-120	5	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 160640008A	Sample number(s): 8262540								
Acetylene	51	49.26			97		79-126		
Ethane	59.2	56.46			95		85-115		
Ethene	60.4	56.67			94		83-115		
Methane	61.3	59.83			98		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16058667601A	Sample number(s): 8262540								
Nitrate Nitrogen	0.750	0.755	0.750	0.751	101	100	90-110	0	20
Sulfate	7.50	7.68	7.50	7.66	102	102	90-110	0	20
Batch number: 16062049502A	Sample number(s): 8262540								
Total Organic Carbon	25	24.72			99		91-113		

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	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: 03/10/2016 12:14

Group Number: 1635540

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: 160640008A	Sample number(s): 8262540 UNSPK: 8262540									
Acetylene	5.0 U	51	48.72	51	47.31	96	93	79-126	3	20
Ethane	5.0 U	59.2	59.69	59.2	54.62	101	92	74-131	9	30
Ethene	5.0 U	60.4	62.55	60.4	56.73	104	94	72-133	10	30
Methane	461.17	61.3	566.51	61.3	496.07	172 (2)	57 (2)	73-125	13	30
	mg/l	**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 16058667601A	Sample number(s): 8262540 UNSPK: P261431									
Nitrate Nitrogen	0.50 U	5.00	5.27			105		90-110		
Sulfate	8.79	50	61.8			106		90-110		
Batch number: 16062049502A	Sample number(s): 8262540 UNSPK: P262852									
Total Organic Carbon	2.04	10	12.15			101		91-113		

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	**mg/l**		
Batch number: 16058667601A	Sample number(s): 8262540 BKG: P261431			
Nitrate Nitrogen	0.50 U	0.50 U	0 (1)	15
Sulfate	8.79	8.97	2 (1)	15
Batch number: 16062049502A	Sample number(s): 8262540 BKG: P262852			
Total Organic Carbon	2.04	2.10	3 (1)	3

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 Boeing 38
Batch number: H160611AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8262541	99	106	100	93
Blank	101	104	98	93
LCS	101	101	97	96
LCSD	100	103	98	96
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H160621AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8262540	102	110	96	94
Blank	101	103	97	92
LCS	105	105	92	97
LCSD	100	103	97	96

*- 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.
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Quality Control Summary

Client Name: The Boeing Company Group Number: 1635540
Reported: 03/10/2016 12:14

Limits: 77-114 74-113 77-110 78-110

Analysis Name: AMEE by RSK-175
Batch number: 160640008A

	Propene
8262540	93
Blank	89
LCS	77
MS	98
MSD	92

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

eurofins | Lancaster Laboratories

Acct. # 13119 For Eurofins Lancaster Laboratories use only Group # 1655540 Sample # 826540-41

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) VOC (8B list)	TOC	Sulfate	Nitrate	AMEE	(5) Remarks/Comments
E-16-0216	2/26/16	1045	H_2O	11	X	X	X	X	X	
Trip Blanks	1/15/16	—	H_2O	2	X					

(6) Turnaround Time Requested (please circle)

Standard 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
S Warbel	2/26/16 1300		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: Bubb Abl	Date/Time 2/27/16 0900
Relinquished by commercial carrier (circle): UPS FedEx Other:		Temperature upon Receipt: 6.3 °C Custody Seals Intact?: Yes No	

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Sample Administration Receipt Documentation Log

Doc Log ID: 137680

Group Number(s): 1635540

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/27/2016 9:00
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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 Krista Abel (3058) at 09:13 on 02/27/2016

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	0.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

G# 1635540



LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S

TRACKING #: 1Z RV3 069 Y0 4376 7668

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS. 17 0.31 LD620D 63.0A 04/2015

SEE NOTICE ON REVERSE regarding UPS Terms, and notice of limitation of liability. Where allowed by law, shipper authorizes UPS to act as forwarding agent for export control and customs purposes. If exported from the US, shipper certifies that the commodities, technology or software were exported from the US in accordance with the Export Administration Regulations. Diversion contrary to law is prohibited. RSD B 1114

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 ≥ 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.

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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.

2Q16 TGA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Danille Jorgensen

DATE: June 13, 2016

RE: **Boeing Portland (TGA)**
Second Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 29 groundwater samples, 4 field duplicates, 4 trip blanks, and 22 vapor samples collected during the second quarter 2016 TGA sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental (LLI), located in Lancaster, Pennsylvania, and Eurofins Air Toxics (Air Toxics) located in Folsom, California. This data quality evaluation covers LLI data packages 1657501, 1658051, 1658369, and 1658370, and Air Toxics data package 1605109. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs], U.S. Environmental Protection Agency [EPA] Method SW8260C); conventional inorganic parameters including N-Nitrate, N-Nitrite, and sulfate (EPA Method 300.0); sulfide (EPA Method 376.1); total and dissolved iron (EPA Method 6010C); total phosphorous (EPA Method 365.1); N-Ammonia (Method SM 4500 NH3 D); total organic carbon (Method SM 5310 C-2000); and methane, ethane, ethane, and acetylene (MEEA; Modified RSK 175). Samples submitted to Air Toxics were analyzed for VOCs (Method TO-15).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008) and the *National Functional Guidelines for Inorganic Data Review* (EPA 2004, 2010). Landau Associates performed an EPA-equivalent Level II verification validation and validation check on each laboratory data package, which included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. Data qualifiers are summarized in Table 1.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition, with the following exceptions:

- Sample preservation requirements were not met for sulfide for sample BOP-74i-0516 in data package 1657501 upon laboratory sample receipt. Laboratory staff attempted to correct the issue; however, after adding the maximum amount of preservation allowable, the sample pH still exceeded the analytical method requirement. The associated sample result was qualified as estimated (J), as indicated in Table 1.
- Sample preservation requirements were not met for sulfide and total organic carbon for sample BOP-77i-0516 in data package 1657501 upon laboratory sample receipt. Laboratory staff attempted to correct the issue; however, after adding the maximum amount of preservation allowable, the sample pH still exceeded the analytical method requirement. The associated sample results were qualified as estimated (J), as indicated in Table 1.
- Sample preservation requirements were not met for sulfide for sample BOP-88i-0516 in data package 1658051 upon laboratory sample receipt. Laboratory staff attempted to correct the issue; however, after adding the maximum amount of preservation allowable, the sample pH still exceeded the analytical method requirement. The associated ample result was qualified as estimated (J), as indicated in Table 1.

All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperatures were recorded. The coolers were received with temperatures within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times. No qualification of the data as necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for analysis. No contamination was detected in the method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

Four trip blanks were submitted to the laboratory for VOC analysis with the sample batches. No contamination was detected in the trip blanks. No qualification of the data was necessary. No field equipment blanks were submitted for analysis with these sample batches.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the organics analyses. Recovery values for the surrogate spikes were within the current laboratory-specified control limits, with the following exceptions:

- Recovery of the surrogate propene associated with the MEEA analysis of sample BOP-88i-0516 in data package 1658051 exceeded the laboratory-specified control limit; the associated detected ethene concentration was qualified as estimated (J) due to potential high analytical bias, as indicated in Table 1.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

At least one MS and/or laboratory replicate sample were analyzed with the conventional parameters in data packages 1657501, 1658051, and 1658369. The recovery values for each required spiking compound and/or the relative percent differences (RPDs) between the laboratory replicate results were within the current project-specified and/or laboratory-specified control limits for all project samples with the following exceptions:

- The MS recovery for nitrate associated with the conventionals analysis of sample BOP-07i-0516 in data package 1657501 was below the laboratory-specified control limit; the associated sample result was qualified as estimated (J), as indicated in Table 1.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for analysis. Recoveries and relative percent differences (RPDs) for the laboratory control samples and associated duplicates were within the current laboratory-specified control limits. No qualification of the data was necessary.

Blind Field Duplicate Results

As specified in the QAPP, blind field duplicate samples were collected at a rate of one blind field duplicate sample per 20 samples, but not less than one blind field duplicate per sampling round. Four pairs of blind field duplicate water samples (TowerInf-0516/TowerInD-0516, TowerEff-0516/TowerEfD-0516, BOP-W-0516/E-2-0516, and BOPX-0516/BOP-07i-0516) were submitted for analysis with data packages 1657501, 1658051, and 1658369.

A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for the duplicate sample pairs submitted for analysis were within the project-specified control limits, with the following exceptions:

- The RPDs for 1,1-dichloroethene and tetrachloroethene associated with the VOC analysis of sample pair BOP-X-0516/BOP-07i-0516 in data package 1657501 exceeded the laboratory-specified control limit; the associated sample results were qualified as estimated (J), as indicated in Table 1.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where dilution was performed due to the presence of high level target species or sample matrix interference.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for these sample batches.

Initial and continuing calibration verification (CCV) recovery result summaries were provided as necessary with all data packages; recoveries were within laboratory-specified control limits for all samples, with the following exceptions:

- The CCV was low for acetone in data package 1658051. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates, laboratory duplicates, matrix spike duplicates, and blind field duplicates. Data accuracy was evaluated through laboratory control samples, matrix spikes, and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



Kristi Schultz
Data Specialist



Danille Jorgensen
Environmental Data Manager

DRJ/kes
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References

EPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. edited by Office of Emergency and Remedial Response. Washington, DC: US Environmental Protection Agency.

EPA. 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. edited by Office of Superfund Remediation and Technology Innovation: US Environmental Protection Agency.

EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

EPA. 2010. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1657501	1,1-Dichloroethene	17	J	BOP-07i-0516	High field duplicate RPD
1657501	1,1-Dichloroethene	23	J	BOP-X-0516	High field duplicate RPD
1657501	Tetrachloroethene	5.5	J	BOP-07i-0516	High field duplicate RPD
1657501	Tetrachloroethene	7.1	J	BOP-X-0516	High field duplicate RPD
1657501	Nitrate	2.1	J	BOP-07i-0516	Low MS recovery
1657501	Sulfide	31.9	J	BOP-74i-0516	Preservation requirements not met
1657501	Sulfide	13.0	J	BOP-77i-0516	Preservation requirements not met
1657501	Total Organic Carbon	2,990	J	BOP-77i-0516	Preservation requirements not met
1658051	Acetone	20	J	BOP-87i-0516	Low continuing calibration recovery
1658051	Acetone	40	J	BOP-85i-0516	Low continuing calibration recovery
1658051	Acetone	5.0 U	UJ	BOP-84i-0516	Low continuing calibration recovery
1658051	Acetone	30	J	BOP-78i-0516	Low continuing calibration recovery
1658051	Acetone	42	J	BOP-88i-0516	Low continuing calibration recovery
1658051	Ethene	7.9	J	BOP-88i-0516	High surrogate recovery
1658051	Sulfide	6.2	J	BOP-88i-0516	Preservation requirements not met
1658369	Acetone	21	J	TowerInf-0516	High field duplicate RPD
1658369	Acetone	7.5	J	TowerInD-0516	High field duplicate RPD

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

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5/18/2016

Ms. Chris Kimmel

Landau Associates, Inc.

130 2nd Avenue South

Edmonds WA 98020

Project Name: Boeing of Portland

Project #: 025116.116.412

Workorder #: 1605109

Dear Ms. Chris Kimmel

The following report includes the data for the above referenced project for sample(s) received on 5/5/2016 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1605109

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	05/05/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/18/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SVE-Inf-0516	TO-15	7.8 "Hg	15 psi
02A	SVE-Gac1-0516	TO-15	3.3 "Hg	14.8 psi
03A	SVE-Eff-0516	TO-15	2.2 "Hg	15 psi
04A	BOP-78i-0516	TO-15	3.7 "Hg	14.8 psi
05A	BOP-79i-0516	TO-15	7.6 "Hg	15 psi
06A	BOP-84i-0516	TO-15	7.3 "Hg	14.9 psi
07A	BOP-85i-0516	TO-15	3.1 "Hg	14.9 psi
08A	BOP-86i-0516	TO-15	5.5 "Hg	15 psi
09A	BOP-87i-0516	TO-15	4.9 "Hg	14.8 psi
10A	BOP-88i-0516	TO-15	2.2 "Hg	14.9 psi
11A	VOW-16-0516	TO-15	3.3 "Hg	14.8 psi
12A	VOW-17-0516	TO-15	6.1 "Hg	15 psi
13A	VOW-18-0516	TO-15	3.5 "Hg	15.2 psi
14A	VP-1-0516	TO-15	2 "Hg	14.7 psi
15A	VP-2-0516	TO-15	6.7 "Hg	14.9 psi
16A	VP-3-0516	TO-15	6.3 "Hg	14.9 psi
17A	VP-4-0516	TO-15	0.2 "Hg	15.2 psi
18A	VP-5-0516	TO-15	0.6 "Hg	15 psi
19A	VP-6-0516	TO-15	2.2 "Hg	14.9 psi
20A	VP-7-0516	TO-15	6.3 "Hg	15.2 psi
21A	VP-8-0516	TO-15	5.3 "Hg	14.8 psi
22A	VP-9-0516	TO-15	3.3 "Hg	14.9 psi
23A	Lab Blank	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1605109

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	05/05/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/18/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
23B	Lab Blank	TO-15	NA	NA
24A	CCV	TO-15	NA	NA
24B	CCV	TO-15	NA	NA
25A	LCS	TO-15	NA	NA
25AA	LCSD	TO-15	NA	NA
25B	LCS	TO-15	NA	NA
25BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 05/18/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Landau Associates, Inc.
Workorder# 1605109

Twenty-two 1 Liter Summa Canister samples were received on May 05, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

The Chain of Custody (COC) information for sample VP-1-0516 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVE-Inf-0516

Lab ID#: 1605109-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.4	1.4	7.4	7.9
Trichloroethene	1.4	49	7.3	260
Tetrachloroethene	1.4	11	9.2	72

Client Sample ID: SVE-Gac1-0516

Lab ID#: 1605109-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.1	1.4	4.5	5.4
1,1,1-Trichloroethane	1.1	2.6	6.1	14
Trichloroethene	1.1	35	6.0	190
Tetrachloroethene	1.1	3.7	7.6	25

Client Sample ID: SVE-Eff-0516

Lab ID#: 1605109-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.1	1.6	4.3	6.2
cis-1,2-Dichloroethene	1.1	1.5	4.3	6.0
Tetrachloroethene	1.1	4.1	7.4	28

Client Sample ID: BOP-78i-0516

Lab ID#: 1605109-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	8.4	6.2	45
Tetrachloroethene	1.1	14	7.8	97

Client Sample ID: BOP-79i-0516

Lab ID#: 1605109-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: BOP-79i-0516

Lab ID#: 1605109-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.4	8.4	9.2	57

Client Sample ID: BOP-84i-0516

Lab ID#: 1605109-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.3	17	7.1	90
Tetrachloroethene	1.3	5.6	9.0	38

Client Sample ID: BOP-85i-0516

Lab ID#: 1605109-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	25	6.0	140
Tetrachloroethene	1.1	21	7.6	140

Client Sample ID: BOP-86i-0516

Lab ID#: 1605109-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	13	6.6	69
Tetrachloroethene	1.2	8.5	8.4	58

Client Sample ID: BOP-87i-0516

Lab ID#: 1605109-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	1.9	6.5	10
Trichloroethene	1.2	87	6.4	470
Tetrachloroethene	1.2	15	8.1	100

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: BOP-88i-0516

Lab ID#: 1605109-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	3.0	5.9	16
Trichloroethene	1.1	36	5.8	190
Tetrachloroethene	1.1	12	7.4	80

Client Sample ID: VOW-16-0516

Lab ID#: 1605109-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.1	9.8	7.6	67

Client Sample ID: VOW-17-0516

Lab ID#: 1605109-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.3	5.4	6.8	29
Tetrachloroethene	1.3	2.9	8.6	20

Client Sample ID: VOW-18-0516

Lab ID#: 1605109-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	1.6	6.2	8.6
Tetrachloroethene	1.2	11	7.8	75

Client Sample ID: VP-1-0516

Lab ID#: 1605109-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	2.7	5.8	14
Tetrachloroethene	1.1	2.7	7.2	18

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-2-0516

Lab ID#: 1605109-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.3	41	7.0	220
Tetrachloroethene	1.3	3.7	8.8	25

Client Sample ID: VP-3-0516

Lab ID#: 1605109-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.3	4.0	7.0	22
cis-1,2-Dichloroethene	1.3	3.9	5.0	15
Trichloroethene	1.3	2.1	6.8	11
Tetrachloroethene	1.3	5.2	8.6	35

Client Sample ID: VP-4-0516

Lab ID#: 1605109-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	8.0	5.5	43
Tetrachloroethene	1.0	5.4	7.0	37

Client Sample ID: VP-5-0516

Lab ID#: 1605109-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	38	5.5	200
Tetrachloroethene	1.0	3.0	7.0	20

Client Sample ID: VP-6-0516

Lab ID#: 1605109-19A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	7.1	5.9	38
cis-1,2-Dichloroethene	1.1	1.1	4.3	4.5

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-6-0516

Lab ID#: 1605109-19A

Trichloroethene	1.1	5.6	5.8	30
Tetrachloroethene	1.1	7.2	7.4	49

Client Sample ID: VP-7-0516

Lab ID#: 1605109-20A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.3	7.6	5.1	30
1,1,1-Trichloroethane	1.3	180	7.0	1000
cis-1,2-Dichloroethene	1.3	9.1	5.1	36
Trichloroethene	1.3	20	6.9	110
Tetrachloroethene	1.3	12	8.7	78

Client Sample ID: VP-8-0516

Lab ID#: 1605109-21A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.2	26	4.8	100
1,1,1-Trichloroethane	1.2	400	6.6	2200
cis-1,2-Dichloroethene	1.2	9.0	4.8	36
Trichloroethene	1.2	19	6.6	100
Tetrachloroethene	1.2	11	8.3	75

Client Sample ID: VP-9-0516

Lab ID#: 1605109-22A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	2.6	6.2	14
Trichloroethene	1.1	24	6.1	130
Tetrachloroethene	1.1	11	7.7	74

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Client Sample ID: SVE-Inf-0516

Lab ID#: 1605109-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051626**	**Date of Collection: 5/2/16 2:00:00 PM**	
Dil. Factor:	**2.73**	**Date of Analysis: 5/17/16 01:29 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.4	Not Detected	3.5	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.4	1.4	7.4	7.9
cis-1,2-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Trichloroethene	1.4	49	7.3	260
Tetrachloroethene	1.4	11	9.2	72

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: SVE-Gac1-0516

Lab ID#: 1605109-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051606**	**Date of Collection: 5/2/16 2:10:00 PM**	
Dil. Factor:	**2.25**	**Date of Analysis: 5/16/16 03:06 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	1.4	4.5	5.4
1,1,1-Trichloroethane	1.1	2.6	6.1	14
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	35	6.0	190
Tetrachloroethene	1.1	3.7	7.6	25

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SVE-Eff-0516

Lab ID#: 1605109-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051607**	**Date of Collection: 5/2/16 2:20:00 PM**	
Dil. Factor:	**2.18**	**Date of Analysis: 5/16/16 03:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	1.6	4.3	6.2
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	1.1	1.5	4.3	6.0
Trichloroethene	1.1	Not Detected	5.8	Not Detected
Tetrachloroethene	1.1	4.1	7.4	28

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BOP-78i-0516

Lab ID#: 1605109-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051608**	**Date of Collection: 5/3/16 1:55:00 PM**	
Dil. Factor:	**2.29**	**Date of Analysis: 5/16/16 03:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.2	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	8.4	6.2	45
Tetrachloroethene	1.1	14	7.8	97

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: BOP-79i-0516

Lab ID#: 1605109-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051609**	**Date of Collection: 5/3/16 1:40:00 PM**	
Dil. Factor:	**2.70**	**Date of Analysis: 5/16/16 04:25 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.4	Not Detected	3.4	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.4	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Trichloroethene	1.4	Not Detected	7.2	Not Detected
Tetrachloroethene	1.4	8.4	9.2	57

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BOP-84i-0516

Lab ID#: 1605109-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051610**	**Date of Collection: 5/3/16 3:50:00 PM**	
Dil. Factor:	**2.66**	**Date of Analysis: 5/16/16 04:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.4	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.3	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.2	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Trichloroethene	1.3	17	7.1	90
Tetrachloroethene	1.3	5.6	9.0	38

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: BOP-85i-0516

Lab ID#: 1605109-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051611**	**Date of Collection: 5/3/16 2:45:00 PM**	
Dil. Factor:	**2.24**	**Date of Analysis: 5/16/16 05:18 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.1	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	25	6.0	140
Tetrachloroethene	1.1	21	7.6	140

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: BOP-86i-0516

Lab ID#: 1605109-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051612**	**Date of Collection: 5/3/16 3:35:00 PM**	
Dil. Factor:	**2.47**	**Date of Analysis: 5/16/16 05:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.7	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	13	6.6	69
Tetrachloroethene	1.2	8.5	8.4	58

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BOP-87i-0516

Lab ID#: 1605109-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051613**	**Date of Collection: 5/3/16 2:30:00 PM**	
Dil. Factor:	**2.40**	**Date of Analysis: 5/16/16 06:10 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	1.9	6.5	10
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	87	6.4	470
Tetrachloroethene	1.2	15	8.1	100

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: BOP-88i-0516

Lab ID#: 1605109-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051614**	**Date of Collection: 5/3/16 2:10:00 PM**	
Dil. Factor:	**2.17**	**Date of Analysis: 5/16/16 06:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
1,1,1-Trichloroethane	1.1	3.0	5.9	16
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	36	5.8	190
Tetrachloroethene	1.1	12	7.4	80

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VOW-16-0516

Lab ID#: 1605109-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051615**	**Date of Collection: 5/3/16 1:25:00 PM**	
Dil. Factor:	**2.25**	**Date of Analysis: 5/16/16 07:03 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.1	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	9.8	7.6	67

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VOW-17-0516

Lab ID#: 1605109-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051617**	**Date of Collection: 5/3/16 12:15:00 PM**	
Dil. Factor:	**2.54**	**Date of Analysis: 5/16/16 09:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Trichloroethene	1.3	5.4	6.8	29
Tetrachloroethene	1.3	2.9	8.6	20

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: VOW-18-0516

Lab ID#: 1605109-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051618**	**Date of Collection: 5/3/16 3:15:00 PM**	
Dil. Factor:	**2.30**	**Date of Analysis: 5/16/16 09:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.3	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	1.6	6.2	8.6
Tetrachloroethene	1.2	11	7.8	75

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VP-1-0516

Lab ID#: 1605109-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051619**	**Date of Collection: 5/3/16 12:25:00 PM**	
Dil. Factor:	**2.14**	**Date of Analysis: 5/16/16 10:26 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.2	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.8	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Trichloroethene	1.1	2.7	5.8	14
Tetrachloroethene	1.1	2.7	7.2	18

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VP-2-0516

Lab ID#: 1605109-15A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051620**	**Date of Collection: 5/3/16 12:45:00 PM**	
Dil. Factor:	**2.59**	**Date of Analysis: 5/16/16 10:52 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.1	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Trichloroethene	1.3	41	7.0	220
Tetrachloroethene	1.3	3.7	8.8	25

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VP-3-0516

Lab ID#: 1605109-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051621**	**Date of Collection: 5/3/16 12:55:00 PM**	
Dil. Factor:	**2.55**	**Date of Analysis: 5/16/16 11:18 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	4.0	7.0	22
cis-1,2-Dichloroethene	1.3	3.9	5.0	15
Trichloroethene	1.3	2.1	6.8	11
Tetrachloroethene	1.3	5.2	8.6	35

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: VP-4-0516

Lab ID#: 1605109-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051622**	**Date of Collection: 5/3/16 4:10:00 PM**	
Dil. Factor:	**2.05**	**Date of Analysis: 5/16/16 11:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.6	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	8.0	5.5	43
Tetrachloroethene	1.0	5.4	7.0	37

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	113	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: VP-5-0516

Lab ID#: 1605109-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051623**	**Date of Collection: 5/3/16 4:15:00 PM**	
Dil. Factor:	**2.06**	**Date of Analysis: 5/17/16 12:11 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.6	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	38	5.5	200
Tetrachloroethene	1.0	3.0	7.0	20

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: VP-6-0516

Lab ID#: 1605109-19A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051624**	**Date of Collection: 5/3/16 3:20:00 PM**	
Dil. Factor:	**2.17**	**Date of Analysis: 5/17/16 12:37 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
1,1,1-Trichloroethane	1.1	7.1	5.9	38
cis-1,2-Dichloroethene	1.1	1.1	4.3	4.5
Trichloroethene	1.1	5.6	5.8	30
Tetrachloroethene	1.1	7.2	7.4	49

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	112	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: VP-7-0516

Lab ID#: 1605109-20A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051720**	**Date of Collection: 5/3/16 3:05:00 PM**	
Dil. Factor:	**2.57**	**Date of Analysis: 5/17/16 07:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,1-Dichloroethene	1.3	7.6	5.1	30
1,1,1-Trichloroethane	1.3	180	7.0	1000
cis-1,2-Dichloroethene	1.3	9.1	5.1	36
Trichloroethene	1.3	20	6.9	110
Tetrachloroethene	1.3	12	8.7	78

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	112	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: VP-8-0516

Lab ID#: 1605109-21A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051625**	**Date of Collection: 5/3/16 3:00:00 PM**	
Dil. Factor:	**2.44**	**Date of Analysis: 5/17/16 01:03 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	26	4.8	100
1,1,1-Trichloroethane	1.2	400	6.6	2200
cis-1,2-Dichloroethene	1.2	9.0	4.8	36
Trichloroethene	1.2	19	6.6	100
Tetrachloroethene	1.2	11	8.3	75

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: VP-9-0516

Lab ID#: 1605109-22A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051719**	**Date of Collection: 5/3/16 4:00:00 PM**	
Dil. Factor:	**2.26**	**Date of Analysis: 5/17/16 07:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	2.6	6.2	14
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	24	6.1	130
Tetrachloroethene	1.1	11	7.7	74

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1605109-23A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051605**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/16 02:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1605109-23B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051710**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/17/16 02:35 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: CCV

Lab ID#: 1605109-24A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/16 09:45 AM**	

Compound	%Recovery
Vinyl Chloride	91
1,1-Dichloroethene	87
1,1,1-Trichloroethane	88
cis-1,2-Dichloroethene	83
Trichloroethene	89
Tetrachloroethene	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 1605109-24B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051705**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/17/16 12:10 PM**	

Compound	%Recovery
Vinyl Chloride	89
1,1-Dichloroethene	83
1,1,1-Trichloroethane	86
cis-1,2-Dichloroethene	81
Trichloroethene	88
Tetrachloroethene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1605109-25A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/16 10:10 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	92	70-130
1,1-Dichloroethene	84	70-130
1,1,1-Trichloroethane	85	70-130
cis-1,2-Dichloroethene	80	70-130
Trichloroethene	88	70-130
Tetrachloroethene	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	86	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 1605109-25AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/16 10:34 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	92	70-130
1,1-Dichloroethene	85	70-130
1,1,1-Trichloroethane	85	70-130
cis-1,2-Dichloroethene	81	70-130
Trichloroethene	88	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 1605109-25B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051706**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/17/16 12:35 PM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	92	70-130
1,1-Dichloroethene	85	70-130
1,1,1-Trichloroethane	86	70-130
cis-1,2-Dichloroethene	81	70-130
Trichloroethene	90	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 1605109-25BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051708**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/17/16 01:22 PM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	94	70-130
1,1-Dichloroethene	86	70-130
1,1,1-Trichloroethane	87	70-130
cis-1,2-Dichloroethene	82	70-130
Trichloroethene	89	70-130
Tetrachloroethene	99	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	87	70-130
4-Bromofluorobenzene	102	70-130

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Sample Transportation Notice
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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmel

Collected by: (Print and Sign) Erin Waibel E Waibel

Company Landau Associates Email ckimmel@landauinc.com

Address 333 SW 5th Ave #700 City Portland State OR Zip 97204

Phone 5035421080 Fax 5035421081

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☑ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	SVE-Inf-0516	33722	5/2/16	1400	TO-15(6 list)	27	5		
02A	SVE-Gac1-0516	35644	5/2/16	1410		30	5		
03A	SVE-Eff-0516	14564	5/2/16	1420		30	5		
04A	BoP-78i-0516	14703	5/3/16	1355		29	5		
05A	BoP-79i-0516	36420		1340		26	5		
06A	BoP-84i-0516	37688		1550		27	5		
07A	BoP-85i-0516	15766		1445		30	5		
08A	BoP-86i-0516	37389		1535		29	5		
09A	BoP-87i-0516	15733		1430		29	5		
10A	BoP-88i-0516	14561		1410		30	5		

Relinquished by: (signature) E Waibel Date/Time 5/3/16 1900
Received by: (signature) FedEx Date/Time 5-5-16 1450

Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Notes:

Lab Use Only
Shipper Name: FedEx
Air Bill #:
Temp (°C): n/a
Condition: Good
Custody Seals Intact? Yes No (None)
Work Order #: 1605109

Form 1293 rev.11

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FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmel
Collected by: (Print and Sign) Erin Waibel E Waibel
Company Landau Associates Email CKimmel@landauinc.com
Address 333 SW 5th Ave #700 City Portland State OR Zip 97204
Phone 5035421090 Fax 5035421091

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
11A	VDW-16-0516	36444	5/3/16	1325	TO-15 (6 list)	29	5		
12A	VDW-17-0516	36459		1215		27	5		
13A	VDW-18-0516	35624		1515		30	5		
14A	VP-1-0516	1L1825		1225		30	5		
15A	VP-2-0516	36557		1245		27	5		
16A	VP-3-0516	31796		1255		27	5		
17A	VP-4-0516	31790		1610		30	5		
18A	VP-5-0516	36402		1615		28	5		
19A	VP-6-0516	36374		1520		30	5		
20A	VP-7-0516	1367		1505		28	5		

Relinquished by: (signature) Date/Time: E Waibel 5/3/16 1800
Received by: (signature) Date/Time: MH EATL 5-5-16 1450
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Notes:

Lab Use Only
Shipper Name: FedEx
Air Bill #:
Temp (°C): 11c
Condition: Good
Custody Seals Intact? Yes No None
Work Order #: 1605109

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Project Manager Chris Kimmel
Collected by: (Print and Sign) E Waibel Erin Waibel
Company Landau Associates Email CKimmel@landauinc.com
Address 333 SW 5th Ave. #700 City Portland State OR Zip 97204
Phone 5035421080 Fax 5035421081

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
21A	VP-8-0516	37790	5/3/16	1500	TO-15 (6 list)	29	5		
22A	VP-9-0516	33395	5/3/16	1600	TO-15 (6 list)	30	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Waibel	5/3/16 1800	FedEx	5-5-16 1450
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		n/a	Good	Yes No (None)	1605109

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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: May 19, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 05/05/2016
Group Number: 1657501
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-12-0516 Water	8365850
E-13-0516 Water	8365851
DP1-0516 Water	8365852
BOP-07i-0516 Water	8365853
BOP-72i-0516 Water	8365854
BOP-72i-0516 Total Metals Water	8365855
BOP-72i-0516 Dissolved Metals Water	8365856
BOP-73i-0516 Water	8365857
BOP-73i-0516 Total Metals Water	8365858
BOP-73i-0516 Dissolved Metals Water	8365859
BOP-74i-0516 Water	8365860
BOP-74i-0516 Total Metals Water	8365861
BOP-74i-0516 Dissolved Metals Water	8365862
BOP-76i-0516 Water	8365863
BOP-76i-0516 Total Metals Water	8365864
BOP-76i-0516 Dissolved Metals Water	8365865
BOP-77i-0516 Water	8365866
BOP-77i-0516 Total Metals Water	8365867
BOP-77i-0516 Dissolved Metals Water	8365868
BOP-82i-0516 Water	8365869
BOP-80i-0516 Water	8365870
BOP-80i-0516 Total Metals Water	8365871
BOP-80i-0516 Dissolved Metals Water	8365872
BOP-81i-0516 Water	8365873
BOP-81i-0516 Total Metals Water	8365874
BOP-81i-0516 Dissolved Metals Water	8365875
BOP-x-0516 Water	8365876
Trip Blank Water	8365877

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,

Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1657501

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.

Preservation requirements were not met. Preservation requirements were not met.

Analysis Specific Comments:

RSKSOP-175 modified, GC Miscellaneous

Batch #: 161340025A (Sample number(s): 8365853-8365854, 8365857, 8365860, 8365863, 8365866, 8365870, 8365873 UNSPK: P365086)

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

EPA 300.0, Wet Chemistry

Sample #s: 8365860, 8365866

Reporting limits were raised due to interference from the sample matrix.

Batch #: 16126667131A (Sample number(s): 8365853-8365854, 8365857, 8365860, 8365863, 8365866, 8365870, 8365873 UNSPK: 8365853 BKG: 8365853)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Nitrate Nitrogen

Sample Description: E-12-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365850
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 07:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

-E-12

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.7**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**16**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 12:04	Kerri E Legerlotz	1

Sample Description: E-12-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365850
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 07:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

-E-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 12:04	Kerri E Legerlotz	1

Sample Description: E-13-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365851
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 07:50 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

-E-13

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**11**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 12:24	Kerri E Legerlotz	1

Sample Description: E-13-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365851
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 07:50 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

-E-13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 12:24	Kerri E Legerlotz	1

Sample Description: DP1-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365852
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 10:10 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

-DP1-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**87**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**2.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**16**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**27**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: DP1-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365852
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 10:10 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

-DP1-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**88**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**11**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**24**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 16:48	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H161321AA	05/11/2016 17:08	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 16:48	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H161321AA	05/11/2016 17:08	Kerri E Legerlotz	10

Sample Description: BOP-07i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365853
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 15:10 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

07I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**17**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**21**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**5.5**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**260**	**E**	2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10
Trial ID: DL						
11996	Acetone	67-64-1	500	U	500	100
11996	Benzene	71-43-2	20	U	20	100
11996	Bromodichloromethane	75-27-4	50	U	50	100
11996	Bromoform	75-25-2	50	U	50	100
11996	Bromomethane	74-83-9	50	U	50	100
11996	2-Butanone	78-93-3	500	U	500	100
11996	Carbon Disulfide	75-15-0	50	U	50	100
11996	Carbon Tetrachloride	56-23-5	20	U	20	100
11996	Chlorobenzene	108-90-7	50	U	50	100
11996	Chloroethane	75-00-3	50	U	50	100

Sample Description: BOP-07i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365853
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 15:10 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

07I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	20	U	20	100
11996	Chloromethane	74-87-3	50	U	50	100
11996	Dibromochloromethane	124-48-1	50	U	50	100
11996	1,1-Dichloroethane	75-34-3	50	U	50	100
11996	1,2-Dichloroethane	107-06-2	20	U	20	100
11996	1,1-Dichloroethene	75-35-4	20	U	20	100
11996	**cis-1,2-Dichloroethene**	156-59-2	**23**		20	100
11996	trans-1,2-Dichloroethene	156-60-5	20	U	20	100
11996	1,2-Dichloropropane	78-87-5	50	U	50	100
11996	cis-1,3-Dichloropropene	10061-01-5	20	U	20	100
11996	trans-1,3-Dichloropropene	10061-02-6	20	U	20	100
11996	Ethylbenzene	100-41-4	50	U	50	100
11996	2-Hexanone	591-78-6	500	U	500	100
11996	4-Methyl-2-pentanone	108-10-1	500	U	500	100
11996	Methylene Chloride	75-09-2	50	U	50	100
11996	Styrene	100-42-5	50	U	50	100
11996	1,1,2,2-Tetrachloroethane	79-34-5	20	U	20	100
11996	Tetrachloroethene	127-18-4	20	U	20	100
11996	Toluene	108-88-3	20	U	20	100
11996	112Trichloro122Trifluoroethane	76-13-1	50	U	50	100
11996	1,1,1-Trichloroethane	71-55-6	50	U	50	100
11996	1,1,2-Trichloroethane	79-00-5	20	U	20	100
11996	**Trichloroethene**	79-01-6	**250**		20	100
11996	Trichlorofluoromethane	75-69-4	50	U	50	100
11996	Vinyl Acetate	108-05-4	50	U	50	100
11996	Vinyl Chloride	75-01-4	20	U	20	100
11996	m+p-Xylene	179601-23-1	50	U	50	100
11996	o-Xylene	95-47-6	50	U	50	100
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	**6.6**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.1**		0.10	1
00228	**Sulfate**	14808-79-8	**9.1**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Comments

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

Sample Description: BOP-07i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365853
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 15:10 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

07I--

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 17:28	Kerri E Legerlotz	10
11996	8260C Boeing 38	SW-846 8260C	2-DL	H161321AA	05/11/2016 17:49	Kerri E Legerlotz	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 17:28	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H161321AA	05/11/2016 17:49	Kerri E Legerlotz	100
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 21:06	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 15:53	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16126667131A	05/05/2016 15:53	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 04:00	James S Mathiot	1

Sample Description: BOP-72i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365854
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 08:40 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

72I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**11**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**0.6**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**2.7**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.9**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.9**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**11,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

Sample Description: BOP-72i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365854
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 08:40 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

72I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**16,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**9.7**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**3.9**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 12:44	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 12:44	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 21:25	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161340025A	05/16/2016 15:20	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 17:00	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16126667131A	05/05/2016 17:00	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 04:40	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16127133301A	05/06/2016 09:30	Tyler W Wise	1

Sample Description: BOP-72i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365855
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 08:40 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**26.9**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:21	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-72i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365856
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 08:40 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**25.8**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:24	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-73i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365857
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:00 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

73I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**14**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**0.9**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.9**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**3.8**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**98**		5.0	1
07105	**Ethene**	74-85-1	**22**		5.0	1
07105	**Methane**	74-82-8	**11,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

Sample Description: BOP-73i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365857
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:00 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

73I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**20,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**1.6**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**3.7**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 18:09	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 18:09	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 21:43	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161340025A	05/16/2016 15:39	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 17:40	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16126667131A	05/05/2016 17:40	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 04:54	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16127133301A	05/06/2016 09:30	Tyler W Wise	1

Sample Description: BOP-73i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365858
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:00 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**26.3**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:27	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-73i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365859
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:00 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**24.0**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:34	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-74i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365860
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 11:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

74I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**57**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.6**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.5**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**11**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	**4-Methyl-2-pentanone**	108-10-1	**5.5**		5.0	1
11996	**Methylene Chloride**	75-09-2	**0.8**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**15,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

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Analysis Report

Sample Description: BOP-74i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365860
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 11:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

74I--

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		ug/l	ug/l	
07105	**Methane**	74-82-8	**19,000**	500	100
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00368	Nitrate Nitrogen	14797-55-8	1.0 U	1.0	10
	Reporting limits were raised due to interference from the sample matrix.				
00228	**Sulfate**	14808-79-8	**601**	200	200
	SM 5310 C-2000		mg/l	mg/l	
00273	**Total Organic Carbon**	n.a.	**2,480**	100	100
	EPA 376.1		mg/l	mg/l	
01333	**Sulfide**	18496-25-8	**31.9**	16.0	8

Sample Comments

Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for sulfide.
Preservation requirements were not met. Regulatory requirements were not met f or all bottles for the following D27/D29 analyses: 00273, 01333

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 13:04	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 13:04	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 22:02	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161340025A	05/16/2016 16:17	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 16:07	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16126667131A	05/05/2016 20:47	Drew M Gerhart	200
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 05:07	James S Mathiot	100
01333	Sulfide	EPA 376.1	1	16127133301A	05/06/2016 09:30	Tyler W Wise	8

Sample Description: BOP-74i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365861
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 11:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**534**	8.00	20

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:37	Katlin N Cataldi	20
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-74i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365862
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 11:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**482**	8.00	20

Sample Comments

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
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:40	Katlin N Cataldi	20
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-76i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365863
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 09:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

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CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**17**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**0.5**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.1**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**10**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**1.1**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.8**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**13,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

Sample Description: BOP-76i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365863
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 09:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

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CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**18,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**4.5**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**26.4**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	**Sulfide**	18496-25-8	**3.1**		2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 13:25	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 13:25	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 22:22	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161340025A	05/16/2016 16:37	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 17:54	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16126667131A	05/05/2016 17:54	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 05:21	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16127133301A	05/06/2016 09:30	Tyler W Wise	1

Sample Description: BOP-76i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365864
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 09:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**11.7**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:43	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-76i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365865
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 09:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**9.91**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:47	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-77i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365866
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:35 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

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CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**75**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**48**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**54**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**3.0**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.8**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**4.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**6.7**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**80**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: BOP-77i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365866
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:35 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

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CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**44**		2.0	10
11996	**trans-1,2-Dichloroethene**	156-60-5	**2.3**		2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**3.9**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	**Vinyl Chloride**	75-01-4	**5.0**		2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10
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	**18**		5.0	1
07105	**Ethene**	74-85-1	**21**		5.0	1
07105	**Methane**	74-82-8	**11,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**17,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	1.0	U	1.0	10
	Reporting limits were raised due to interference from the sample matrix.					
00228	**Sulfate**	14808-79-8	**892**		200	200
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2,990**		100	100

Sample Description: BOP-77i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365866
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:35 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

77I--

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 376.1**		mg/l	mg/l	
01333	**Sulfide**	18496-25-8	**13.0**	2.0	1

Sample Comments

Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for sulfide and TOC. Preservation requirements were not met. Regulatory requirements were not met f or all bottles for the following D27/D29 analyses: 00273, 01333

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 18:50	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H161321AA	05/11/2016 19:10	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 18:50	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H161321AA	05/11/2016 19:10	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 22:40	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161340025A	05/16/2016 16:56	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 16:33	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	2	16126667131A	05/05/2016 21:41	Drew M Gerhart	200
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 05:49	James S Mathiot	100
01333	Sulfide	EPA 376.1	1	16130133301A	05/09/2016 22:15	Hannah M Royer	1

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Analysis Report

Sample Description: BOP-77i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365867
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:35 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**582**	8.00	20

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:56	Katlin N Cataldi	20
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-77i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365868
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 10:35 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**607**	8.00	20

Sample Comments

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
01754	Iron	SW-846 6010C	2	161390635005	05/19/2016 08:59	Katlin N Cataldi	20
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635004	05/13/2016 05:46	James L Mertz	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	2	161390635005	05/18/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-82i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365869
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 11:50 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

82I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**12**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.9**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 13:45	Kerri E Legerlotz	1

Sample Description: BOP-82i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365869
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/03/2016 11:50 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

82I--

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 13:45	Kerri E Legerlotz	1

Sample Description: BOP-80i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365870
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 14:05 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

80I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**13**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.4**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**6.7**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**11,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**15,000**		1,000	200

Sample Description: BOP-80i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365870
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 14:05 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

80I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	Sulfate	14808-79-8	1.0	U	1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 14:05	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 14:05	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 23:18	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161340025A	05/16/2016 17:15	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 18:20	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16126667131A	05/05/2016 18:20	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 06:02	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16130133301A	05/09/2016 22:15	Hannah M Royer	1

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Analysis Report

Sample Description: BOP-80i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365871
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 14:05 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**27.2**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161270635005	05/13/2016 11:56	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635005	05/12/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-80i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365872
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 14:05 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**9.50**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161270635005	05/13/2016 11:59	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635005	05/12/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-81i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365873
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 13:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

81I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**12**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**15,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**21,000**		1,000	200

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Analysis Report

Sample Description: BOP-81i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365873
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 13:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

81I--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**3.8**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 14:26	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 14:26	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161340025A	05/16/2016 23:36	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161340025A	05/16/2016 17:34	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16126667131A	05/05/2016 18:47	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16126667131A	05/05/2016 18:47	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16130049502A	05/09/2016 06:16	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16130133301A	05/09/2016 22:15	Hannah M Royer	1

Sample Description: BOP-81i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365874
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 13:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	mg/l	mg/l	
01754	**Iron**	7439-89-6	**17.4**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161270635005	05/13/2016 12:03	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635005	05/12/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-81i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365875
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 13:30 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**3.84**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161270635005	05/13/2016 12:12	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161270635005	05/12/2016 22:00	Annamaria Kuhns	1

Sample Description: BOP-x-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365876
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 08:00 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

BOP-X

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.7**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**23**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**25**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**7.1**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**3.3**		0.5	1
11996	**1,1,1-Trichloroethane**	71-55-6	**3.6**		0.5	1
11996	**1,1,2-Trichloroethane**	79-00-5	**0.2**		0.2	1
11996	**Trichloroethene**	79-01-6	**320**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10

Sample Description: BOP-x-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365876
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/04/2016 08:00 by EMW The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

BOP-X

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**17**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**20**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**5.0**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**250**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 19:30	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H161321AA	05/11/2016 19:51	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 19:30	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H161321AA	05/11/2016 19:51	Kerri E Legerlotz	10

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8365877
LL Group # 1657501
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 04/20/2016

The Boeing Company

Submitted: 05/05/2016 09:55
Reported: 05/19/2016 14:17

BOP-T

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 11:43	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 11:43	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/19/2016 14:17

Group Number: 1657501

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: H161321AA	Sample number(s): 8365850-8365854,8365857,8365860,8365863,8365866,8365869-8365870,8365873,8365876-8365877		
Acetone	5.0	U	5.0
Benzene	0.5	U	0.5
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	1.0	U	1.0
Carbon Tetrachloride	0.5	U	0.5
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.5	U	0.5
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.5	U	0.5
1,1-Dichloroethene	0.5	U	0.5
cis-1,2-Dichloroethene	0.5	U	0.5
trans-1,2-Dichloroethene	0.5	U	0.5
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.5	U	0.5
trans-1,3-Dichloropropene	0.5	U	0.5
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.5	U	0.5
Tetrachloroethene	0.5	U	0.5
Toluene	0.5	U	0.5
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.5	U	0.5
Trichloroethene	0.5	U	0.5
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.5	U	0.5
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 161340025A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873		

*- 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: 05/19/2016 14:17

Group Number: 1657501

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 161270635005	Sample number(s): 8365871-8365872,8365874-8365875		
Iron	0.400	U	0.400
Batch number: 161390635005	Sample number(s): 8365855-8365856,8365858-8365859,8365861-8365862,8365864-8365865,8365867-8365868		
Iron	0.400	U	0.400
Batch number: 16126667131A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16130049502A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873		
Total Organic Carbon	1.0	U	1.0
Batch number: 16127133301A	Sample number(s): 8365854,8365857,8365860,8365863		
Sulfide	2.0	U	2.0
Batch number: 16130133301A	Sample number(s): 8365866,8365870,8365873		
Sulfide	2.0	U	2.0

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: H161321AA	Sample number(s): 8365850-8365854,8365857,8365860,8365863,8365866,8365869-8365870,8365873,8365876-8365877								
Acetone	37.5	36	37.5	33.66	96	90	65-124	7	30
Benzene	5.00	4.94	5.00	4.75	99	95	80-120	4	30
Bromodichloromethane	5.00	4.86	5.00	4.77	97	95	80-120	2	30
Bromoform	5.00	4.69	5.00	4.46	94	89	62-128	5	30
Bromomethane	5.00	5.42	5.00	5.29	108	106	71-126	2	30
2-Butanone	37.5	39.61	37.5	38.26	106	102	66-135	3	30
Carbon Disulfide	5.00	4.50	5.00	4.35	90	87	65-120	3	30
Carbon Tetrachloride	5.00	5.31	5.00	5.02	106	100	65-134	6	30
Chlorobenzene	5.00	5.14	5.00	4.80	103	96	80-120	7	30
Chloroethane	5.00	5.14	5.00	4.81	103	96	71-122	7	30
Chloroform	5.00	4.99	5.00	4.89	100	98	80-120	2	30
Chloromethane	5.00	5.07	5.00	4.81	101	96	63-121	5	30
Dibromochloromethane	5.00	4.95	5.00	4.57	99	91	68-131	8	30
1,1-Dichloroethane	5.00	4.84	5.00	4.67	97	93	75-120	4	30
1,2-Dichloroethane	5.00	4.92	5.00	4.88	98	98	72-127	1	30
1,1-Dichloroethene	5.00	5.29	5.00	5.02	106	100	70-120	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: 05/19/2016 14:17

Group Number: 1657501

LCS/LCSD (continued)

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					
cis-1,2-Dichloroethene	5.00	5.03	5.00	4.86	101	97	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.24	5.00	5.03	105	101	80-120	4	30
1,2-Dichloropropane	5.00	4.81	5.00	4.68	96	94	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.45	5.00	4.34	89	87	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.62	5.00	4.38	92	88	77-121	5	30
Ethylbenzene	5.00	5.18	5.00	4.76	104	95	80-120	9	30
2-Hexanone	25	27.12	25	25.6	108	102	73-128	6	30
4-Methyl-2-pentanone	25	27.81	25	25.19	111	101	71-129	10	30
Methylene Chloride	5.00	4.90	5.00	4.72	98	94	80-120	4	30
Styrene	5.00	5.16	5.00	4.81	103	96	80-122	7	30
1,1,2,2-Tetrachloroethane	5.00	4.76	5.00	4.68	95	94	80-120	2	30
Tetrachloroethene	5.00	5.58	5.00	5.08	112	102	80-120	9	30
Toluene	5.00	5.17	5.00	4.75	103	95	80-120	8	30
112Trichloro122Trifluoroethane	5.00	5.28	5.00	5.09	106	102	75-120	4	30
1,1,1-Trichloroethane	5.00	5.14	5.00	4.96	103	99	70-124	4	30
1,1,2-Trichloroethane	5.00	5.04	5.00	4.78	101	96	80-120	5	30
Trichloroethene	5.00	5.29	5.00	5.02	106	100	80-120	5	30
Trichlorofluoromethane	5.00	5.49	5.00	5.20	110	104	64-133	5	30
Vinyl Acetate	12.5	12.39	12.5	12.09	99	97	40-185	2	30
Vinyl Chloride	5.00	5.36	5.00	5.11	107	102	62-128	5	30
m+p-Xylene	10	10.37	10	9.58	104	96	80-120	8	30
o-Xylene	5.00	5.05	5.00	4.64	101	93	80-120	8	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 161340025A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873								
Acetylene	51.2	54.81			107		61-148		
Ethane	59.2	61.08			103		85-115		
Ethene	60.8	62.42			103		83-115		
Methane	59.8	64.28			107		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 161270635005	Sample number(s): 8365871-8365872,8365874-8365875								
Iron	1.00	0.995			99		80-120		
Batch number: 161390635005	Sample number(s): 8365855-8365856,8365858-8365859,8365861-8365862,8365864-8365865,8365867-8365868								
Iron	1.00	0.987			99		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16126667131A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873								
Nitrate Nitrogen	0.750	0.722			96		90-110		
Sulfate	7.50	7.23			96		90-110		
Batch number: 16130049502A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873								
Total Organic Carbon	25	24.71			99		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16127133301A	Sample number(s): 8365854,8365857,8365860,8365863								
Sulfide	20	20.04	20	19.83	100	99	80-120	1	4

*- 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: 05/19/2016 14:17

Group Number: 1657501

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: 16130133301A	Sample number(s): 8365866,8365870,8365873								
Sulfide	20	18.03	20	18.43	90	92	80-120	2	4

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: 161340025A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873 UNSPK: P365086									
Acetylene	5.0 U	51.2	56.43	51.2	55.65	110	109	61-148	1	20
Ethane	5.0 U	59.2	61.08	59.2	62.08	103	105	74-131	2	30
Ethene	5.0 U	60.8	65.4	60.8	65.47	108	108	72-133	0	30
Methane	1459.18	59.8	1740.72	59.8	1627.5	471 (2)	281 (2)	73-125	7	30
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 161270635005	Sample number(s): 8365871-8365872,8365874-8365875 UNSPK: P365750									
Iron	0.400 U	1.00	0.970	1.00	0.965	97	97	75-125	1	20
Batch number: 161390635005	Sample number(s): 8365855-8365856,8365858-8365859,8365861-8365862,8365864-8365865,8365867-8365868 UNSPK: P365746									
Iron	0.0696	1.00	1.03	1.00	1.02	96	95	75-125	1	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16126667131A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873 UNSPK: 8365853									
Nitrate Nitrogen	2.08	1.00	2.87			79*		90-110		
Sulfate	9.14	10	18.82			97		90-110		
Batch number: 16130049502A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873 UNSPK: 8365853									
Total Organic Carbon	1.0 U	10	9.68			97		91-113		

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: 05/19/2016 14:17

Group Number: 1657501

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 161270635005	Sample number(s): 8365871-8365872,8365874-8365875 BKG: P365750			
Iron	0.400 U	0.400 U	0 (1)	20
Batch number: 161390635005	Sample number(s): 8365855-8365856,8365858-8365859,8365861-8365862,8365864-8365865,8365867-8365868 BKG: P365746			
Iron	0.0696	0.0617	12 (1)	20
	mg/l	mg/l		
Batch number: 16126667131A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873 BKG: 8365853			
Nitrate Nitrogen	2.08	2.12	2	15
Sulfate	9.14	9.21	1	15
Batch number: 16130049502A	Sample number(s): 8365853-8365854,8365857,8365860,8365863,8365866,8365870,8365873 BKG: 8365853			
Total Organic Carbon	1.0 U	1.0 U	0 (1)	3
	mg/l	mg/l		
Batch number: 16127133301A	Sample number(s): 8365854,8365857,8365860,8365863 BKG: 8365863			
Sulfide	3.08	3.08	0 (1)	20
Batch number: 16130133301A	Sample number(s): 8365866,8365870,8365873 BKG: P366619			
Sulfide	4.91	4.81	2 (1)	20

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 Boeing 38
Batch number: H161321AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8365850	99	96	102	90
8365851	99	101	103	90
8365852	100	98	104	89
8365852DL	105	100	99	92
8365853	99	99	103	90
8365853DL	100	100	104	91
8365854	107	102	96	93
8365857	102	102	101	93
8365860	105	105	97	97
8365863	105	103	98	93
8365866	99	101	103	95
8365866DL	105	104	97	91
8365869	105	101	98	91
8365870	100	102	102	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
Group Number: 1657501
Reported: 05/19/2016 14:17

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
8365873	102	100	102	92
8365876	99	97	105	91
8365876DL	104	100	99	91
8365877	99	98	104	90
Blank	101	94	102	90
LCS	98	98	105	94
LCSD	102	100	99	93
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 161340025A

	Propene
8365853	91
8365854	78
8365854DL	103
8365857	70
8365857DL	104
8365860	84
8365860DL	101
8365863	78
8365863DL	100
8365866	91
8365866DL	101
8365870	89
8365870DL	103
8365873	88
8365873DL	104
Blank	105
LCS	101
MS	98
MSD	99
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

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Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1657501 Sample # 836585O-77
Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: 025116.116.492 → Boeing of Portland
Site Program/#:
Boeing PM: ~~Chris K~~ Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify):
Sampler: EMW / SMM # of Coolers:

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	4 Analyses Requested: VOC (38 List)	TOC	Sulfate	Nitrate	AMEE	Sulfide	Total Iron	Dissolved Iron					5 Remarks/Comments
E-12-0516	5/3/16	0730	H_2O	3	X												
E-13-0516	5/3/16	0750		3	X												
DP1-0516	5/3/16	1010		3	X												
BOP-07i-0516	5/4/16	1510		11	X	X	X	X	X								
BOP-72i-0516		0840		14	X	X	X	X	X	X	X	X					
BOP-73i-0516		1000		14	X	X	X	X	X	X	X	X					
BOP-74i-0516		1130		14	X	X	X	X	X	X	X	X					
BOP-76i-0516		0930		14	X	X	X	X	X	X	X	X					
BOP-77i-0516	↓	1035		14	X	X	X	X	X	X	X	X					
BOP-82i-0516	5/3/16	1150		3	X												
BOP-80i-0516	5/4/16	1405		14	X	X	X	X	X	X	X	X					
BOP-81i-0516	5/4/16	1330		14	X	X	X	X	X	X	X	X					
BOP-x-0516	5/4/16	0900		3	X												
Trip Blanks	4/20/16	—	↓	2	X												

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

7	Relinquished by:	Date/Time	Received by:	Date/Time
	[signature]	5/4/16 1630		
	Relinquished by:	Date/Time	Received by:	Date/Time
	Relinquished by:	Date/Time	Received by: [signature]	Date/Time 5-5-16 / 955

Relinquished by commercial carrier (circle): UPS FedEx Other:
Temperature upon Receipt: 0.6-1.0 °C
Custody Seals Intact?: (Yes) No

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Sample Administration Receipt Documentation Log

Doc Log ID: 145425

Group Number(s): 165750 1

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	05/05/2016 9:55
Number of Packages:	2	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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 Joseph Huber (7831) at 11:08 on 05/05/2016

Samples Chilled Details

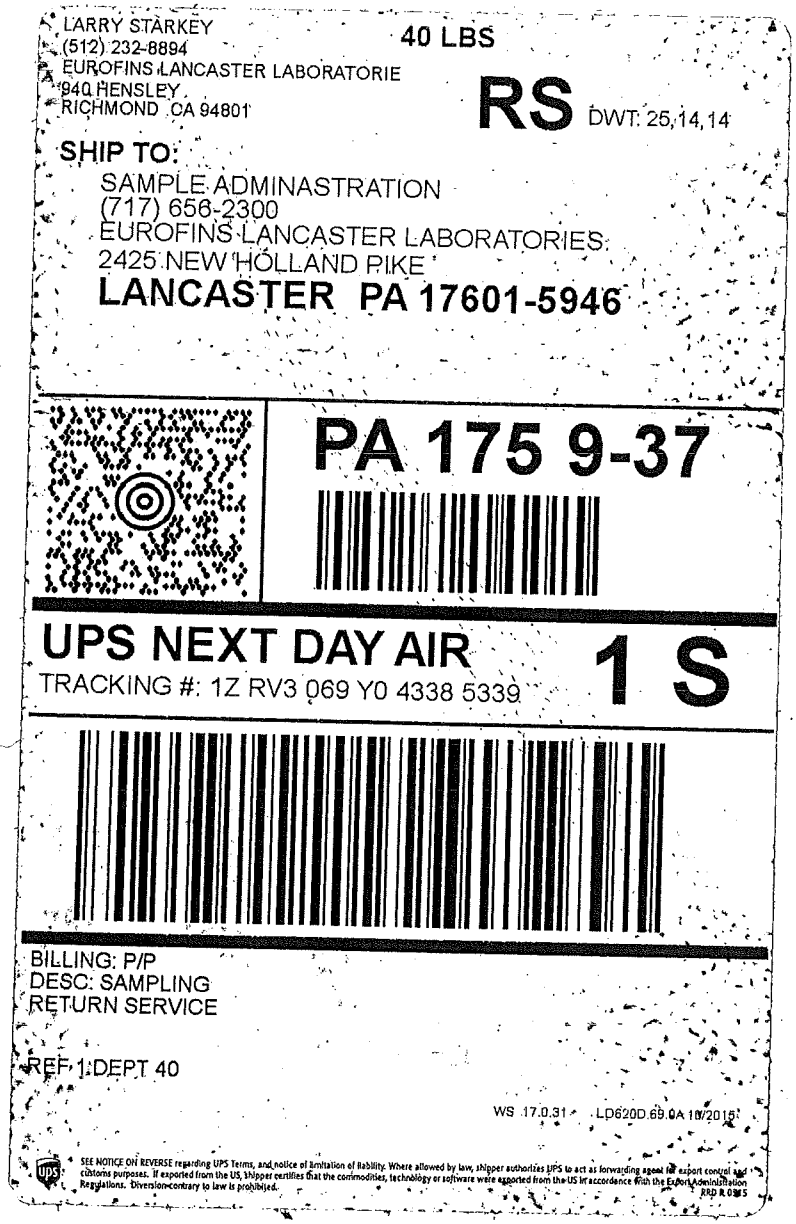
Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	1.0	DT	Wet	Y	Bagged	N
2	DT131	0.5	DT	Wet	Y	Bagged	N

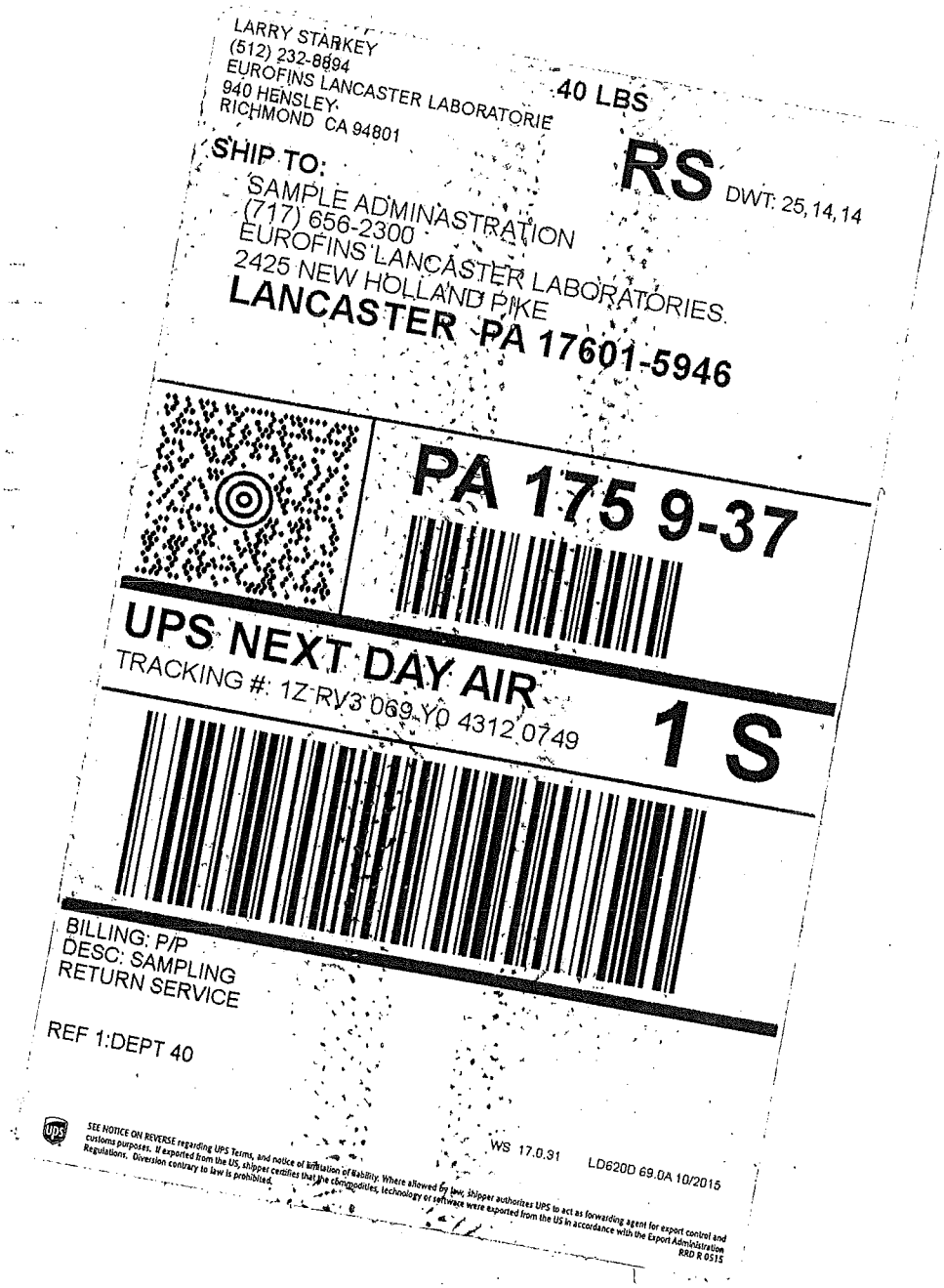
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Lancaster, PA 17605-2425

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PA 175 9-37
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1 S
TRACKING #: 1Z RV3 069 Y0 4338 5339
BILLING: P/P
DESC: SAMPLING
RETURN SERVICE
REF 1: DEPT 40
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LD620D.69.0A 10/2015
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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 ≥ 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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Analysis Report

REVISED

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: June 06, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 05/06/2016
Group Number: 1658051
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-2-0516 Water	8368618
E-2-0516 Total Metals Water	8368619
E-2-0516 Dissolved Metals Water	8368620
E-3-0516 Water	8368621
E-3-0516 Total Metals Water	8368622
E-3-0516 Dissolved Metals Water	8368623
E-4-0516 Water	8368624
E-4-0516 Total Metals Water	8368625
E-4-0516 Dissolved Metals Water	8368626
E-15-0516 Water	8368627
E-16-0516 Water	8368628
BOP-16i-0516 Water	8368629
BOP-16i-0516 Total Metals Water	8368630
BOP-16i-0516 Dissolved Metals Water	8368631
BOP-87i-0516 Water	8368632
BOP-85i-0516 Water	8368633
BOP-84i-0516 Water	8368634
BOP-86i-0516 Water	8368635
BOP-75i-0516 Water	8368636
BOP-79i-0516 Water	8368637
BOP-78i-0516 Water	8368638
BOP-88i-0516 Water	8368639
BOP-88i-0516 Total Metals Water	8368640
BOP-88i-0516 Dissolved Metals Water	8368641
BOP-W-0516 Water	8368642
Trip Blank Water	8368643

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

REVISED

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,

Kay Hower

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1658051

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.

Preservation requirements were not met. Preservation requirements were not met.

Analysis Specific Comments:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8368634

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8368632, 8368638, 8368639

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8368633

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The analysis was repeated and the continuing calibration verification standard bracketing the sample on the second trial is within specification.

Batch #: H161371AA (Sample number(s): 8368632-8368634, 8368638-8368639 UNSPK: P376557)

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

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: Acetone, 2-Butanone

RSKSOP-175 modified, GC Miscellaneous

Batch #: 161310014A (Sample number(s): 8368618, 8368621, 8368624, 8368627-8368629, 8368639)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 8368639, 8368639RE

SW-846 6010C, Metals

Batch #: 161300635004 (Sample number(s): 8368619-8368620, 8368622-8368623, 8368625-8368626, 8368630-8368631 UNSPK: P368184 BKG: P368184)

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

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

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

Batch #: 161300635005 (Sample number(s): 8368640-8368641 UNSPK: P368188 BKG: P368188)

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

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

SW-846 6010C, Metals Dissolved

Batch #: 161300635004 (Sample number(s): 8368619-8368620, 8368622-8368623, 8368625-8368626, 8368630-8368631 UNSPK: P368184 BKG: P368184)

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

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

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

Batch #: 161300635005 (Sample number(s): 8368640-8368641 UNSPK: P368188 BKG: P368188)

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

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

EPA 300.0, Wet Chemistry

Sample #s: 8368639

Reporting limits were raised due to interference from the sample matrix.

SM 5310 C-2000, Wet Chemistry

Batch #: 16131049502A (Sample number(s): 8368618, 8368621, 8368624, 8368627 UNSPK: P368219 BKG: P368219)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Batch #: 16131049502B (Sample number(s): 8368628-8368629, 8368639 UNSPK: P368446 BKG: P368446)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

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Sample Description: E-2-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368618
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:10 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPE2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.3**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**24,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200

REVISED

Sample Description: E-2-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368618
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:10 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPE2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**32,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.26**		0.10	1
00228	**Sulfate**	14808-79-8	**2.8**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 14:46	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 14:46	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161310014A	05/10/2016 11:34	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161310014A	05/11/2016 16:28	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16127667131B	05/06/2016 23:23	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16127667131B	05/06/2016 23:23	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16131049502A	05/10/2016 11:59	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16131133301A	05/10/2016 21:30	Hannah M Royer	1

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Analysis Report

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Sample Description: E-2-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368619
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:10 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**15.5**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:03	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

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Analysis Report

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Sample Description: E-2-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368620
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:10 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**12.7**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:07	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

REVISED

Sample Description: E-3-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368621
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:55 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPE3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**8.7**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.9**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**23,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200

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Analysis Report

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Sample Description: E-3-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368621
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:55 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPE3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**32,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**1.1**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 15:06	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 15:06	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161310014A	05/10/2016 11:52	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161310014A	05/11/2016 16:47	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16127667131B	05/07/2016 00:03	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16127667131B	05/07/2016 00:03	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16131049502A	05/10/2016 12:27	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16131133301A	05/10/2016 21:30	Hannah M Royer	1

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Analysis Report

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Sample Description: E-3-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368622
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:55 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**15.6**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:10	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

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Analysis Report

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Sample Description: E-3-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368623
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 14:55 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**13.8**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:20	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

REVISED

Sample Description: E-4-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368624
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:40 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPE4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**4.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**1.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**0.9**		0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**27**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

REVISED

Sample Description: E-4-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368624
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:40 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPE4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**3.1**		2.0	10
11996	cis-1,2-Dichloroethene	156-59-2	2.0	U	2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**21**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10
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	**99**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.88**		0.10	1
00228	**Sulfate**	14808-79-8	**7.6**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

REVISED

Sample Description: E-4-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368624
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:40 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPE4

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 15:27	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H161341AA	05/13/2016 15:31	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 15:27	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H161341AA	05/13/2016 15:31	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161310014A	05/11/2016 18:02	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16127667131B	05/07/2016 00:17	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16127667131B	05/07/2016 00:17	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16131049502A	05/10/2016 12:41	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16131133301A	05/10/2016 21:30	Hannah M Royer	1

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Analysis Report

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Sample Description: E-4-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368625
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:40 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.479**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:23	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

REVISED

Sample Description: E-4-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368626
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:40 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**0.536**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:27	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

REVISED

Sample Description: E-15-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368627
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:20 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOE15

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.7**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.9**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**5.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**5.5**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**11,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100

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Sample Description: E-15-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368627
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:20 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOE15

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**15,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**2.2**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 15:47	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 15:47	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161310014A	05/10/2016 12:29	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161310014A	05/11/2016 17:06	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16127667131B	05/07/2016 00:30	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16127667131B	05/07/2016 00:30	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16131049502A	05/10/2016 12:54	James S Mathiot	1

REVISED

Sample Description: E-16-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368628
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOE16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.3**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**7.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**23**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**3.5**		1.0	10
00228	**Sulfate**	14808-79-8	**7.0**		1.0	1

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Analysis Report

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Sample Description: E-16-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368628
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 13:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOE16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**SM 5310 C-2000**		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 16:07	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 16:07	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161310014A	05/10/2016 12:48	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16127667131B	05/07/2016 01:10	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16127667131B	05/07/2016 00:57	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16131049502B	05/10/2016 14:45	James S Mathiot	1

REVISED

Sample Description: BOP-16i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368629
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 11:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO16I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.8**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**1,800**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50	U	50	10
07105	Ethane	74-84-0	50	U	50	10
07105	Ethene	74-85-1	50	U	50	10
07105	**Methane**	74-82-8	**1,800**		50	10

REVISED

Sample Description: BOP-16i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368629
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 11:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO16I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**6.8**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161321AA	05/11/2016 16:28	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161321AA	05/11/2016 16:28	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	161310014A	05/10/2016 13:25	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161310014A	05/11/2016 17:24	Johanna C Kennedy	10
00368	Nitrate Nitrogen	EPA 300.0	1	16127667131B	05/07/2016 00:43	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16127667131B	05/07/2016 00:43	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16131049502B	05/10/2016 14:58	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16131133301A	05/10/2016 21:30	Hannah M Royer	1

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Analysis Report

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Sample Description: BOP-16i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368630
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 11:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:30	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

REVISED

Sample Description: BOP-16i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368631
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 11:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161300635004	05/13/2016 17:33	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635004	05/13/2016 05:36	James L Mertz	1

REVISED

Sample Description: BOP-87i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368632
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:35 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO87I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**20**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**49**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.7**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.6**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.3**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.0**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

REVISED

Sample Description: BOP-87i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368632
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:35 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO87I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161371AA	05/16/2016 12:22	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161371AA	05/16/2016 12:22	Kerri E Legerlotz	1

REVISED

Sample Description: BOP-85i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368633
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO85I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**40**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**290**	**E**	5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.8**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.0**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.2**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.9**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**39**		25	5
11996	Benzene	71-43-2	1.0	U	1.0	5
11996	Bromodichloromethane	75-27-4	2.5	U	2.5	5
11996	Bromoform	75-25-2	2.5	U	2.5	5
11996	Bromomethane	74-83-9	2.5	U	2.5	5
11996	**2-Butanone**	78-93-3	**310**		25	5
11996	Carbon Disulfide	75-15-0	2.5	U	2.5	5
11996	Carbon Tetrachloride	56-23-5	1.0	U	1.0	5
11996	Chlorobenzene	108-90-7	2.5	U	2.5	5

REVISED

Sample Description: BOP-85i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368633
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO85I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	2.5	U	2.5	5
11996	**Chloroform**	67-66-3	**2.8**		1.0	5
11996	Chloromethane	74-87-3	2.5	U	2.5	5
11996	Dibromochloromethane	124-48-1	2.5	U	2.5	5
11996	1,1-Dichloroethane	75-34-3	2.5	U	2.5	5
11996	1,2-Dichloroethane	107-06-2	1.0	U	1.0	5
11996	1,1-Dichloroethene	75-35-4	1.0	U	1.0	5
11996	cis-1,2-Dichloroethene	156-59-2	1.0	U	1.0	5
11996	trans-1,2-Dichloroethene	156-60-5	1.0	U	1.0	5
11996	1,2-Dichloropropane	78-87-5	2.5	U	2.5	5
11996	cis-1,3-Dichloropropene	10061-01-5	1.0	U	1.0	5
11996	trans-1,3-Dichloropropene	10061-02-6	1.0	U	1.0	5
11996	Ethylbenzene	100-41-4	2.5	U	2.5	5
11996	2-Hexanone	591-78-6	25	U	25	5
11996	4-Methyl-2-pentanone	108-10-1	25	U	25	5
11996	Methylene Chloride	75-09-2	2.5	U	2.5	5
11996	Styrene	100-42-5	2.5	U	2.5	5
11996	1,1,2,2-Tetrachloroethane	79-34-5	1.0	U	1.0	5
11996	Tetrachloroethene	127-18-4	1.0	U	1.0	5
11996	Toluene	108-88-3	1.0	U	1.0	5
11996	112Trichloro122Trifluoroethane	76-13-1	2.5	U	2.5	5
11996	1,1,1-Trichloroethane	71-55-6	2.5	U	2.5	5
11996	1,1,2-Trichloroethane	79-00-5	1.0	U	1.0	5
11996	Trichloroethene	79-01-6	1.0	U	1.0	5
11996	Trichlorofluoromethane	75-69-4	2.5	U	2.5	5
11996	Vinyl Acetate	108-05-4	2.5	U	2.5	5
11996	Vinyl Chloride	75-01-4	1.0	U	1.0	5
11996	m+p-Xylene	179601-23-1	2.5	U	2.5	5
11996	o-Xylene	95-47-6	2.5	U	2.5	5

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The analysis was repeated and the continuing calibration verification standard bracketing the sample on the second trial is within specification.

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Analysis Report

REVISED

Sample Description: BOP-85i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368633
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO85I

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161371AA	05/16/2016 13:03	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H161341AA	05/13/2016 17:54	Kerri E Legerlotz	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161371AA	05/16/2016 13:03	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H161341AA	05/13/2016 17:54	Kerri E Legerlotz	5

REVISED

Sample Description: BOP-84i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368634
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 10:05 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO84I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**45**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.6**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1.8**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.8**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.5**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

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Sample Description: BOP-84i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368634
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 10:05 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO84I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161371AA	05/16/2016 13:43	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161371AA	05/16/2016 13:43	Kerri E Legerlotz	1

REVISED

Sample Description: BOP-86i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368635
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:55 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO86I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**25**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**98**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.2**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.4**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.0**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.6**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.4**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

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Analysis Report

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Sample Description: BOP-86i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368635
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:55 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO86I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 15:52	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 15:52	Kerri E Legerlotz	1

REVISED

Sample Description: BOP-75i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368636
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:50 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO75I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**11**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**0.8**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.1**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.4**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.9**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.0**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**5.4**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

REVISED

Sample Description: BOP-75i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368636
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:50 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO75I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 12:29	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 12:29	Kerri E Legerlotz	1

REVISED

Sample Description: BOP-79i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368637
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:25 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO79I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**140**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**140**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.4**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.6**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**37**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.7**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

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Analysis Report

REVISED

Sample Description: BOP-79i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368637
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:25 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO79I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 16:32	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 16:32	Kerri E Legerlotz	1

REVISED

Sample Description: BOP-78i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368638
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:15 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO78I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**30**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**46**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.7**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**10**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.2**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**6.1**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of

REVISED

Sample Description: BOP-78i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368638
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 09:15 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO78I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161371AA	05/16/2016 18:27	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161371AA	05/16/2016 18:27	Kerri E Legerlotz	1

REVISED

Sample Description: BOP-88i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368639
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO88I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**42**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**250**	**E**	5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.8**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.1**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**65**	**E**	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**1**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**6.8**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**51**		25	5
11996	Benzene	71-43-2	1.0	U	1.0	5
11996	Bromodichloromethane	75-27-4	2.5	U	2.5	5
11996	Bromoform	75-25-2	2.5	U	2.5	5
11996	Bromomethane	74-83-9	2.5	U	2.5	5
11996	**2-Butanone**	78-93-3	**290**		25	5
11996	Carbon Disulfide	75-15-0	2.5	U	2.5	5
11996	Carbon Tetrachloride	56-23-5	1.0	U	1.0	5
11996	Chlorobenzene	108-90-7	2.5	U	2.5	5

REVISED

Sample Description: BOP-88i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368639
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO88I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	2.5	U	2.5	5
11996	**Chloroform**	67-66-3	**2.8**		1.0	5
11996	Chloromethane	74-87-3	2.5	U	2.5	5
11996	Dibromochloromethane	124-48-1	2.5	U	2.5	5
11996	1,1-Dichloroethane	75-34-3	2.5	U	2.5	5
11996	1,2-Dichloroethane	107-06-2	1.0	U	1.0	5
11996	1,1-Dichloroethene	75-35-4	1.0	U	1.0	5
11996	**cis-1,2-Dichloroethene**	156-59-2	**58**		1.0	5
11996	trans-1,2-Dichloroethene	156-60-5	1.0	U	1.0	5
11996	1,2-Dichloropropane	78-87-5	2.5	U	2.5	5
11996	cis-1,3-Dichloropropene	10061-01-5	1.0	U	1.0	5
11996	trans-1,3-Dichloropropene	10061-02-6	1.0	U	1.0	5
11996	Ethylbenzene	100-41-4	2.5	U	2.5	5
11996	2-Hexanone	591-78-6	25	U	25	5
11996	4-Methyl-2-pentanone	108-10-1	25	U	25	5
11996	Methylene Chloride	75-09-2	2.5	U	2.5	5
11996	Styrene	100-42-5	2.5	U	2.5	5
11996	1,1,2,2-Tetrachloroethane	79-34-5	1.0	U	1.0	5
11996	Tetrachloroethene	127-18-4	1.0	U	1.0	5
11996	Toluene	108-88-3	1.0	U	1.0	5
11996	112Trichloro122Trifluoroethane	76-13-1	2.5	U	2.5	5
11996	1,1,1-Trichloroethane	71-55-6	2.5	U	2.5	5
11996	1,1,2-Trichloroethane	79-00-5	1.0	U	1.0	5
11996	**Trichloroethene**	79-01-6	**2.9**		1.0	5
11996	Trichlorofluoromethane	75-69-4	2.5	U	2.5	5
11996	Vinyl Acetate	108-05-4	2.5	U	2.5	5
11996	**Vinyl Chloride**	75-01-4	**5.6**		1.0	5
11996	m+p-Xylene	179601-23-1	2.5	U	2.5	5
11996	o-Xylene	95-47-6	2.5	U	2.5	5

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-21

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

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	**7.9**		5.0	1

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Analysis Report

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Sample Description: BOP-88i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368639
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO88I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**10,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**15,000**		500	100
Trial ID: RE						
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	**9.4**		5.0	1
07105	**Methane**	74-82-8	**11,000**	**E**	5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	1.0	U	1.0	10
	Reporting limits were raised due to interference from the sample matrix.					
00228	**Sulfate**	14808-79-8	**2,370**		500	500
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**8,780**		250	250
	EPA 376.1		**mg/l**		**mg/l**	
01333	**Sulfide**	18496-25-8	**6.2**		2.0	1

Sample Comments

Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for TOC.
Preservation requirements were not met. Regulatory requirements were not met f or all bottles for the following D27/D29 analyses: 00273, 01333
Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for Sulfide.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161371AA	05/16/2016 19:08	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H161371AA	05/16/2016 15:04	Kerri E Legerlotz	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161371AA	05/16/2016 19:08	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H161371AA	05/16/2016 15:04	Kerri E Legerlotz	5

REVISED

Sample Description: BOP-88i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368639
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BO88I

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	161310014A	05/10/2016 13:44	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	161310014A	05/11/2016 17:43	Johanna C Kennedy	100
07105	AMEE by RSK-175	RSKSOP-175 modified	3-RE	161310014A	05/11/2016 18:25	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16127667131B	05/07/2016 01:23	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16127667131B	05/07/2016 01:37	Drew M Gerhart	500
00273	Total Organic Carbon	SM 5310 C-2000	1	16131049502B	05/10/2016 15:12	James S Mathiot	250
01333	Sulfide	EPA 376.1	1	16131133301A	05/10/2016 21:30	Hannah M Royer	1

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Analysis Report

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Sample Description: BOP-88i-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368640
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**2,530**	8.00	20

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161300635005	05/18/2016 03:31	Matthew R Machtinger	20
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635005	05/15/2016 06:17	James L Mertz	1

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Analysis Report

REVISED

Sample Description: BOP-88i-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368641
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:45 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**2,510**	8.00	20

Sample Comments

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
01754	Iron	SW-846 6010C	1	161300635005	05/18/2016 03:47	Matthew R Machtinger	20
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635005	05/15/2016 06:17	James L Mertz	1

REVISED

Sample Description: BOP-W-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368642
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOP-W

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 12:49	Kerri E Legerlotz	1

REVISED

Sample Description: BOP-W-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368642
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/05/2016 08:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOP-W

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 12:49	Kerri E Legerlotz	1

REVISED

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8368643
LL Group # 1658051
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 04/20/2016

The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 06/06/2016 11:26

BOPTB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 11:07	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 11:07	Kerri E Legerlotz	1

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

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: H161321AA	Sample number(s): 8368618,8368621,8368624,8368627-8368629		
Acetone	5.0	U	5.0
Benzene	0.5	U	0.5
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	1.0	U	1.0
Carbon Tetrachloride	0.5	U	0.5
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.5	U	0.5
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.5	U	0.5
1,1-Dichloroethene	0.5	U	0.5
cis-1,2-Dichloroethene	0.5	U	0.5
trans-1,2-Dichloroethene	0.5	U	0.5
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.5	U	0.5
trans-1,3-Dichloropropene	0.5	U	0.5
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.5	U	0.5
Tetrachloroethene	0.5	U	0.5
Toluene	0.5	U	0.5
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.5	U	0.5
Trichloroethene	0.5	U	0.5
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.5	U	0.5
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H161341AA	Sample number(s): 8368624,8368633,8368635-8368637,8368642-8368643		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H161371AA	Sample number(s): 8368632-8368634,8368638-8368639		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 161310014A	Sample number(s): 8368618,8368621,8368624,8368627-8368629,8368639		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 161300635004	Sample number(s): 8368619-8368620,8368622-8368623,8368625-8368626,8368630-8368631		
Iron	0.400	U	0.400
Batch number: 161300635005	Sample number(s): 8368640-8368641		
Iron	0.400	U	0.400
Batch number: 16127667131B	Sample number(s): 8368618,8368621,8368624,8368627-8368629,8368639		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16131049502A	Sample number(s): 8368618,8368621,8368624,8368627		
Total Organic Carbon	1.0	U	1.0
Batch number: 16131049502B	Sample number(s): 8368628-8368629,8368639		
Total Organic Carbon	1.0	U	1.0
Batch number: 16131133301A	Sample number(s): 8368618,8368621,8368624,8368629,8368639		
Sulfide	2.0	U	2.0

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

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: H161321AA	Sample number(s): 8368618,8368621,8368624,8368627-8368629								
Acetone	37.5	36	37.5	33.66	96	90	65-124	7	30
Benzene	5.00	4.94	5.00	4.75	99	95	80-120	4	30
Bromodichloromethane	5.00	4.86	5.00	4.77	97	95	80-120	2	30
Bromoform	5.00	4.69	5.00	4.46	94	89	62-128	5	30
Bromomethane	5.00	5.42	5.00	5.29	108	106	71-126	2	30
2-Butanone	37.5	39.61	37.5	38.26	106	102	66-135	3	30
Carbon Disulfide	5.00	4.50	5.00	4.35	90	87	65-120	3	30
Carbon Tetrachloride	5.00	5.31	5.00	5.02	106	100	65-134	6	30
Chlorobenzene	5.00	5.14	5.00	4.80	103	96	80-120	7	30
Chloroethane	5.00	5.14	5.00	4.81	103	96	71-122	7	30
Chloroform	5.00	4.99	5.00	4.89	100	98	80-120	2	30
Chloromethane	5.00	5.07	5.00	4.81	101	96	63-121	5	30
Dibromochloromethane	5.00	4.95	5.00	4.57	99	91	68-131	8	30
1,1-Dichloroethane	5.00	4.84	5.00	4.67	97	93	75-120	4	30
1,2-Dichloroethane	5.00	4.92	5.00	4.88	98	98	72-127	1	30
1,1-Dichloroethene	5.00	5.29	5.00	5.02	106	100	70-120	5	30
cis-1,2-Dichloroethene	5.00	5.03	5.00	4.86	101	97	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.24	5.00	5.03	105	101	80-120	4	30
1,2-Dichloropropane	5.00	4.81	5.00	4.68	96	94	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.45	5.00	4.34	89	87	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.62	5.00	4.38	92	88	77-121	5	30
Ethylbenzene	5.00	5.18	5.00	4.76	104	95	80-120	9	30
2-Hexanone	25	27.12	25	25.6	108	102	73-128	6	30
4-Methyl-2-pentanone	25	27.81	25	25.19	111	101	71-129	10	30
Methylene Chloride	5.00	4.90	5.00	4.72	98	94	80-120	4	30
Styrene	5.00	5.16	5.00	4.81	103	96	80-122	7	30
1,1,2,2-Tetrachloroethane	5.00	4.76	5.00	4.68	95	94	80-120	2	30
Tetrachloroethene	5.00	5.58	5.00	5.08	112	102	80-120	9	30
Toluene	5.00	5.17	5.00	4.75	103	95	80-120	8	30
112Trichloro122Trifluoroethane	5.00	5.28	5.00	5.09	106	102	75-120	4	30
1,1,1-Trichloroethane	5.00	5.14	5.00	4.96	103	99	70-124	4	30
1,1,2-Trichloroethane	5.00	5.04	5.00	4.78	101	96	80-120	5	30
Trichloroethene	5.00	5.29	5.00	5.02	106	100	80-120	5	30
Trichlorofluoromethane	5.00	5.49	5.00	5.20	110	104	64-133	5	30
Vinyl Acetate	12.5	12.39	12.5	12.09	99	97	40-185	2	30
Vinyl Chloride	5.00	5.36	5.00	5.11	107	102	62-128	5	30
m+p-Xylene	10	10.37	10	9.58	104	96	80-120	8	30
o-Xylene	5.00	5.05	5.00	4.64	101	93	80-120	8	30
Batch number: H161341AA	Sample number(s): 8368624,8368633,8368635-8368637,8368642-8368643								
Acetone	37.5	35.61	37.5	35.38	95	94	65-124	1	30
Benzene	5.00	4.97	5.00	4.82	99	96	80-120	3	30
Bromodichloromethane	5.00	5.02	5.00	4.81	100	96	80-120	4	30
Bromoform	5.00	4.85	5.00	4.91	97	98	62-128	1	30
Bromomethane	5.00	5.17	5.00	4.88	103	98	71-126	6	30
2-Butanone	37.5	38.29	37.5	36.33	102	97	66-135	5	30
Carbon Disulfide	5.00	4.57	5.00	4.40	91	88	65-120	4	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
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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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

LCS/LCSD (continued)

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
Carbon Tetrachloride	5.00	5.15	5.00	4.95	103	99	65-134	4	30
Chlorobenzene	5.00	4.91	5.00	4.89	98	98	80-120	0	30
Chloroethane	5.00	4.70	5.00	4.57	94	91	71-122	3	30
Chloroform	5.00	4.98	5.00	4.81	100	96	80-120	4	30
Chloromethane	5.00	4.30	5.00	4.10	86	82	63-121	5	30
Dibromochloromethane	5.00	4.85	5.00	4.83	97	97	68-131	1	30
1,1-Dichloroethane	5.00	4.85	5.00	4.62	97	92	75-120	5	30
1,2-Dichloroethane	5.00	4.75	5.00	4.64	95	93	72-127	2	30
1,1-Dichloroethene	5.00	5.19	5.00	5.05	104	101	70-120	3	30
cis-1,2-Dichloroethene	5.00	5.28	5.00	5.01	106	100	80-120	5	30
trans-1,2-Dichloroethene	5.00	5.27	5.00	5.05	105	101	80-120	4	30
1,2-Dichloropropane	5.00	4.97	5.00	4.77	99	95	80-120	4	30
cis-1,3-Dichloropropene	5.00	4.86	5.00	4.55	97	91	80-124	7	30
trans-1,3-Dichloropropene	5.00	4.66	5.00	4.49	93	90	77-121	4	30
Ethylbenzene	5.00	4.84	5.00	4.77	97	95	80-120	2	30
2-Hexanone	25	25.35	25	23.98	101	96	73-128	6	30
4-Methyl-2-pentanone	25	26.24	25	24.33	105	97	71-129	8	30
Methylene Chloride	5.00	5.00	5.00	4.87	100	97	80-120	2	30
Styrene	5.00	4.95	5.00	4.90	99	98	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.31	5.00	4.54	86	91	80-120	5	30
Tetrachloroethene	5.00	5.01	5.00	4.98	100	100	80-120	1	30
Toluene	5.00	4.86	5.00	4.77	97	95	80-120	2	30
112Trichloro122Trifluoroethane	5.00	5.11	5.00	4.98	102	100	75-120	3	30
1,1,1-Trichloroethane	5.00	4.95	5.00	4.77	99	95	70-124	4	30
1,1,2-Trichloroethane	5.00	4.90	5.00	4.79	98	96	80-120	2	30
Trichloroethene	5.00	5.31	5.00	5.08	106	102	80-120	4	30
Trichlorofluoromethane	5.00	4.88	5.00	4.64	98	93	64-133	5	30
Vinyl Acetate	12.5	12.77	12.5	12.88	102	103	40-185	1	30
Vinyl Chloride	5.00	4.67	5.00	4.57	93	91	62-128	2	30
m+p-Xylene	10	9.75	10	9.79	97	98	80-120	0	30
o-Xylene	5.00	4.88	5.00	4.81	98	96	80-120	1	30
Batch number: H161371AA	Sample number(s): 8368632-8368634,8368638-8368639								
Acetone	37.5	31.15			83		65-124		
Benzene	5.00	4.83			97		80-120		
Bromodichloromethane	5.00	4.93			99		80-120		
Bromoform	5.00	4.89			98		62-128		
Bromomethane	5.00	5.70			114		71-126		
2-Butanone	37.5	35.46			95		66-135		
Carbon Disulfide	5.00	4.69			94		65-120		
Carbon Tetrachloride	5.00	4.94			99		65-134		
Chlorobenzene	5.00	4.72			94		80-120		
Chloroethane	5.00	5.27			105		71-122		
Chloroform	5.00	4.80			96		80-120		
Chloromethane	5.00	5.33			107		63-121		
Dibromochloromethane	5.00	4.85			97		68-131		
1,1-Dichloroethane	5.00	4.65			93		75-120		
1,2-Dichloroethane	5.00	4.70			94		72-127		
1,1-Dichloroethene	5.00	5.07			101		70-120		
cis-1,2-Dichloroethene	5.00	4.95			99		80-120		

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

LCS/LCSD (continued)

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					
trans-1,2-Dichloroethene	5.00	5.08			102		80-120		
1,2-Dichloropropane	5.00	4.86			97		80-120		
cis-1,3-Dichloropropene	5.00	4.73			95		80-124		
trans-1,3-Dichloropropene	5.00	4.45			89		77-121		
Ethylbenzene	5.00	4.62			92		80-120		
2-Hexanone	25	25			100		73-128		
4-Methyl-2-pentanone	25	25.09			100		71-129		
Methylene Chloride	5.00	4.96			99		80-120		
Styrene	5.00	4.77			95		80-122		
1,1,2,2-Tetrachloroethane	5.00	4.53			91		80-120		
Tetrachloroethene	5.00	4.78			96		80-120		
Toluene	5.00	4.71			94		80-120		
112Trichloro122Trifluoroethane	5.00	5.19			104		75-120		
1,1,1-Trichloroethane	5.00	4.78			96		70-124		
1,1,2-Trichloroethane	5.00	4.75			95		80-120		
Trichloroethene	5.00	4.93			99		80-120		
Trichlorofluoromethane	5.00	5.44			109		64-133		
Vinyl Acetate	12.5	12.32			99		40-185		
Vinyl Chloride	5.00	5.69			114		62-128		
m+p-Xylene	10	9.35			93		80-120		
o-Xylene	5.00	4.70			94		80-120		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 161310014A	Sample number(s): 8368618,8368621,8368624,8368627-8368629,8368639								
Acetylene	51.2	55.53	51.2	54.47	108	106	61-148	2	20
Ethane	59.2	62.99	59.2	61.95	106	105	85-115	2	20
Ethene	60.8	64.92	60.8	62.94	107	104	83-115	3	20
Methane	59.8	65.93	59.8	64.86	110	108	85-115	2	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 161300635004	Sample number(s): 8368619-8368620,8368622-8368623,8368625-8368626,8368630-8368631								
Iron	1.00	0.986			99		80-120		
Batch number: 161300635005	Sample number(s): 8368640-8368641								
Iron	1.00	1.14			114		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16127667131B	Sample number(s): 8368618,8368621,8368624,8368627-8368629,8368639								
Nitrate Nitrogen	0.750	0.728			97		90-110		
Sulfate	7.50	7.12			95		90-110		
Batch number: 16131049502A	Sample number(s): 8368618,8368621,8368624,8368627								
Total Organic Carbon	25	25.01	25	24.67	100	99	91-113	1	20
Batch number: 16131049502B	Sample number(s): 8368628-8368629,8368639								
Total Organic Carbon	25	25.01	25	24.67	100	99	91-113	1	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16131133301A	Sample number(s): 8368618,8368621,8368624,8368629,8368639								

*- 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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

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
Sulfide	20	19.04	20	19.04	95	95	80-120	0	4

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: H161371AA	Sample number(s): 8368632-8368634,8368638-8368639 UNSPK: P376557										
Acetone	5.0	U	37.5	21.93	37.5	34.52	58*	92	65-124	45*	30
Benzene	0.2	U	5.00	4.75	5.00	5.11	95	102	80-120	7	30
Bromodichloromethane	0.5	U	5.00	4.89	5.00	5.36	98	107	80-120	9	30
Bromoform	0.5	U	5.00	4.95	5.00	5.60	99	112	62-128	12	30
Bromomethane	0.5	U	5.00	5.93	5.00	5.97	119	119	71-126	1	30
2-Butanone	5.0	U	37.5	30.59	37.5	44.83	82	120	66-135	38*	30
Carbon Disulfide	0.5	U	5.00	4.71	5.00	5.09	94	102	65-120	8	30
Carbon Tetrachloride	0.2	U	5.00	4.92	5.00	5.34	98	107	65-134	8	30
Chlorobenzene	0.5	U	5.00	4.78	5.00	5.35	96	107	80-120	11	30
Chloroethane	0.5	U	5.00	5.59	5.00	5.47	112	109	71-122	2	30
Chloroform	0.2	U	5.00	4.79	5.00	5.17	96	103	80-120	8	30
Chloromethane	0.5	U	5.00	5.60	5.00	5.62	112	112	63-121	0	30
Dibromochloromethane	0.5	U	5.00	4.87	5.00	5.46	97	109	68-131	11	30
1,1-Dichloroethane	0.5	U	5.00	4.57	5.00	4.97	91	99	75-120	8	30
1,2-Dichloroethane	0.2	U	5.00	4.86	5.00	5.22	97	104	72-127	7	30
1,1-Dichloroethene	0.2	U	5.00	5.22	5.00	5.45	104	109	70-120	4	30
cis-1,2-Dichloroethene	0.2	U	5.00	4.93	5.00	5.36	99	107	80-120	8	30
trans-1,2-Dichloroethene	0.2	U	5.00	5.10	5.00	5.43	102	109	80-120	6	30
1,2-Dichloropropane	0.5	U	5.00	4.73	5.00	5.23	95	105	80-120	10	30
cis-1,3-Dichloropropene	0.2	U	5.00	4.58	5.00	4.97	92	99	80-124	8	30
trans-1,3-Dichloropropene	0.2	U	5.00	4.48	5.00	5.04	90	101	77-121	12	30
Ethylbenzene	0.5	U	5.00	4.58	5.00	5.07	92	101	80-120	10	30
2-Hexanone	5.0	U	25	24.09	25	31.51	96	126	73-128	27	30
4-Methyl-2-pentanone	5.0	U	25	24.15	25	31.03	97	124	71-129	25	30
Methylene Chloride	0.5	U	5.00	4.71	5.00	5.12	94	102	80-120	8	30
Styrene	0.5	U	5.00	4.62	5.00	5.14	92	103	80-122	11	30
1,1,2,2-Tetrachloroethane	0.2	U	5.00	4.94	5.00	5.40	99	108	80-120	9	30
Tetrachloroethene	0.2	U	5.00	4.87	5.00	5.36	97	107	80-120	10	30
Toluene	0.2	U	5.00	4.70	5.00	5.20	94	104	80-120	10	30
112Trichloro122Trifluoroethane	0.5	U	5.00	5.21	5.00	5.58	104	112	75-120	7	30
1,1,1-Trichloroethane	0.5	U	5.00	4.74	5.00	5.14	95	103	70-124	8	30
1,1,2-Trichloroethane	0.2	U	5.00	5.05	5.00	5.54	101	111	80-120	9	30
Trichloroethene	0.2	U	5.00	5.12	5.00	5.53	102	111	80-120	8	30
Trichlorofluoromethane	0.5	U	5.00	5.53	5.00	5.62	111	112	64-133	2	30
Vinyl Acetate	0.5	U	12.5	14.37	12.5	13.56	115	108	40-185	6	30
Vinyl Chloride	0.2	U	5.00	5.94	5.00	6.03	119	121	62-128	2	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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

MS/MSD (continued)

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l	ug/l					
m+p-Xylene	0.5 U	10	9.38	10	10.29	94	103	80-120	9	30
o-Xylene	0.5 U	5.00	4.65	5.00	5.11	93	102	80-120	10	30
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 161300635004	Sample number(s): 8368619-8368620,8368622-8368623,8368625-8368626,8368630-8368631 UNSPK: P368184									
Iron	0.647	1.00	1.08	1.00	1.91	43*	127*	75-125	56*	20
Batch number: 161300635005	Sample number(s): 8368640-8368641 UNSPK: P368188									
Iron	0.497	1.00	1.37	1.00	1.08	88	58*	75-125	24*	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16127667131B	Sample number(s): 8368618,8368621,8368624,8368627-8368629,8368639 UNSPK: P368536									
Nitrate Nitrogen	0.50 U	5.00	5.20			104		90-110		
Sulfate	25.27	50	72.05			94		90-110		
Batch number: 16131049502A	Sample number(s): 8368618,8368621,8368624,8368627 UNSPK: P368219									
Total Organic Carbon	8.31	10	18.68			104		91-113		
Batch number: 16131049502B	Sample number(s): 8368628-8368629,8368639 UNSPK: P368446									
Total Organic Carbon	16.78	10	21.46			47*		91-113		

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 161300635004	Sample number(s): 8368619-8368620,8368622-8368623,8368625-8368626,8368630-8368631 BKG: P368184			
Iron	0.647	0.109	142* (1)	20
Batch number: 161300635005	Sample number(s): 8368640-8368641 BKG: P368188			
Iron	0.497	0.498	0 (1)	20
	mg/l	mg/l		
Batch number: 16127667131B	Sample number(s): 8368618,8368621,8368624,8368627-8368629,8368639 BKG: P368536			
Nitrate Nitrogen	0.50 U	0.50 U	0 (1)	15
Sulfate	25.27	24.27	4 (1)	15
Batch number: 16131049502A	Sample number(s): 8368618,8368621,8368624,8368627 BKG: P368219			
Total Organic Carbon	8.31	9.18	10*	3
Batch number: 16131049502B	Sample number(s): 8368628-8368629,8368639 BKG: P368446			
Total Organic Carbon	16.78	16.75	0	3

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

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: 16131133301A	Sample number(s): 8368618,8368621,8368624,8368629,8368639 BKG: 8368639			
Sulfide	6.21	5.81	7 (1)	20

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 Boeing 38
Batch number: H161321AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8368618	96	96	103	90
8368621	103	99	99	92
8368624	99	98	103	91
8368627	106	105	98	93
8368628	101	98	104	90
8368629	104	99	99	92
Blank	101	94	102	90
LCS	98	98	105	94
LCSD	102	100	99	93
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H161341AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8368624DL	97	95	102	94
8368633DL	98	98	102	94
8368635	95	97	103	95
8368636	105	104	96	96
8368637	96	95	102	95
8368642	103	103	96	97
8368643	97	99	102	93
Blank	100	97	99	92
LCS	105	104	96	97
LCSD	102	102	99	96
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H161371AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8368632	99	104	102	97
8368633	97	99	101	96
8368634	96	97	102	96
8368638	98	99	100	96

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/2016 11:26

Group Number: 1658051

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.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8368639	99	97	100	96
8368639DL	100	97	99	95
Blank	99	98	99	93
LCS	101	100	97	97
MS	104	111	97	96
MSD	105	105	98	97
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 161310014A

	Propene
8368618	83
8368618DL	88
8368621	84
8368621DL	91
8368624	84
8368627	89
8368627DL	90
8368628	91
8368629	90
8368629DL	88
8368639	145*
8368639DL	93
8368639RE	150*
Blank	85
LCS	89
LCSD	85
Limits:	44-123

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(2) The unspiked result was more than four times the spike added.
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Boeing Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1658051 Sample # 8368C18-43

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 2

(4) Analyses Requested

(5) Remarks/Comments

BOP-88i-0516 has metals QC (lab requested)

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOC (38 List)	TOC	Sulfate	Nitrate	AMEE	Sulfide	Total Iron	Dissolved Iron
E-2-0516	5/5/16	1410	H_2O	14	X	X	X	X	X	X	X	X
E-3-0516		1455		14	X	X	X	X	X	X	X	X
E-4-0516		1340		14	X	X	X	X	X	X	X	X
E-15-0516		1320		11	X	X	X	X	X			
E-16-0516		1300		11	X	X	X	X	X			
BOP-16i-0516		1100		14	X	X	X	X	X	X	X	X
BOP-87i-0516		0935		3	X							
BOP-85i-0516		0945		3	X							
BOP-84i-0516		1005		3	X							
BOP-86i-0516		0955		3	X							
BOP-75i-0516		0950		3	X							
BOP-79i-0516		0925		3	X							
BOP-78i-0516		0915		3	X							
BOP-88i-0516		0845		17	X	X	X	X	X	X	X	X
BOP-W-0516		0800		3	X							

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	5/5/16 1620	[signature]	
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	5/6/16 1100

Relinquished by commercial carrier (circle): UPS FedEx Other: _____

Temperature upon Receipt: 0.6 °C

Custody Seals Intact?: Yes No

(7)

Page 81 of 86

Boeing Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1658051 Sample # 536861S-43

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 02511.6.116.42
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify):
Sampler: EMM # of Coolers: 2

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 List)	(5) Remarks/Comments
Trip Blanks	4/20/16	—	H_2O	2	X	

Page 02 of 66

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	5/5/16 1620		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 5/6/16 1010

Relinquished by commercial carrier (circle): UPS FedEx Other: _____

Temperature upon Receipt: 0.6 °C

Custody Seals Intact?: Yes No

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 145644

Group Number(s): 1658051

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	05/06/2016 10:10
Number of Packages:	2	Number of Projects:	1
State/Province of Origin:	OR		

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:	HCl
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Wesley Miller (2308) at 14:14 on 05/06/2016

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	0.7	DT	Wet	Y	Bagged	N
2	DT121	0.6	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE-
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR **1 S**

TRACKING #: 1Z RV3 069 Y0 4571 8752

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

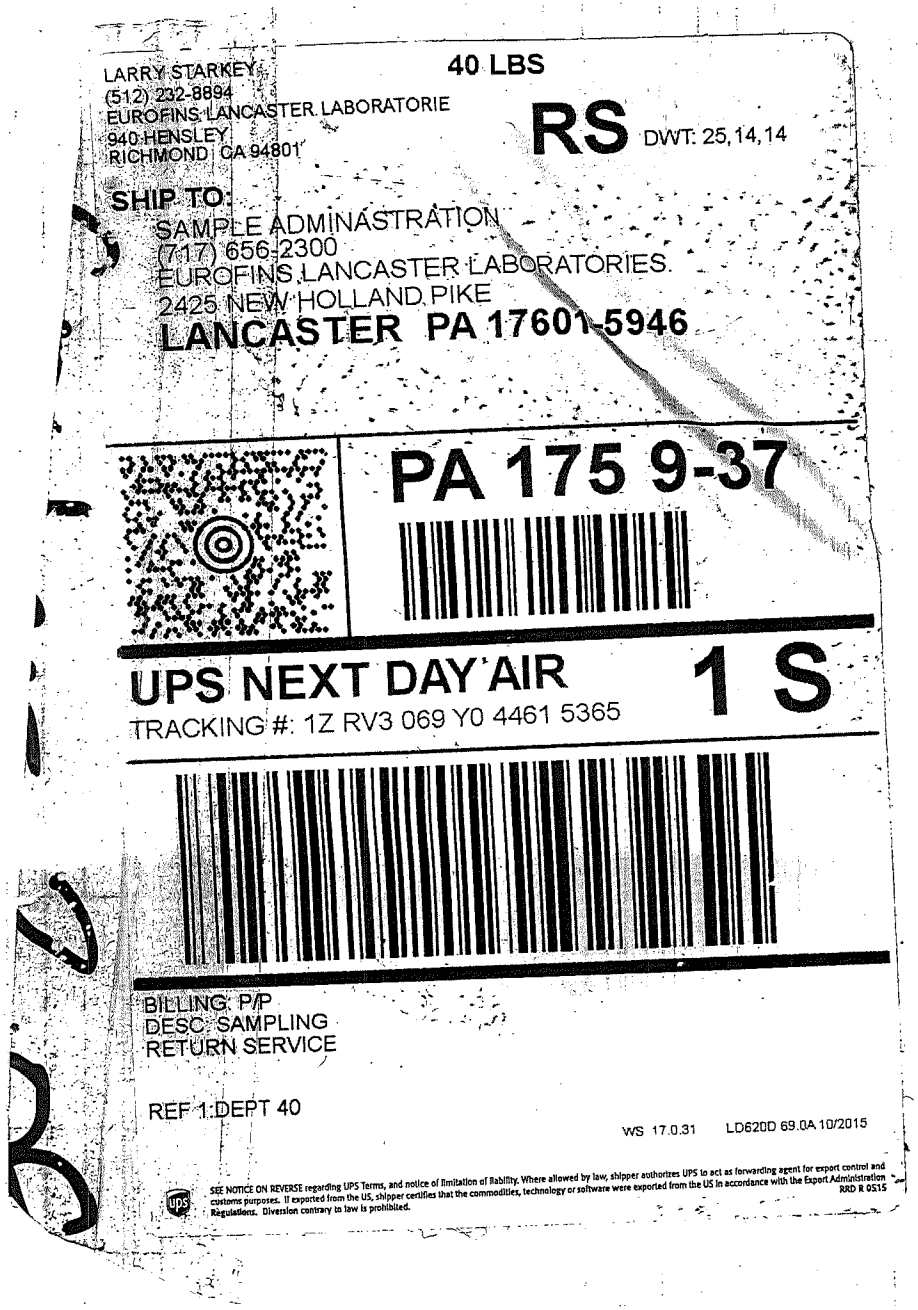
WS 17.0.31 LD620D 69.0A 10/2015

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GOLD BROWN
POSITION #10
1759P
LANCASTER (PA)

1ZRV3069Y045718752

1 of 1 CS



40 LBS

LARRY STARKEY
(512) 232-8894
EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

RS DWT: 25,14,14

SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S

TRACKING #: 1Z RV3 069 Y0 4461 5365

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1: DEPT 40

WS 17.0.31 LD620D 69.0A 10/2015

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RRD R 0515

L608591 FG

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 ≥ 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:

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

Prepared for:

The Boeing Company

Report Date: May 23, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 05/07/2016
Group Number: 1658369
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
TowerInf-0516 Water	8370251
TowerInf-0516 Total Metals Water	8370252
TowerInf-0516 Dissolved Metals Water	8370253
TowerInD-0516 Water	8370254
TowerEff-0516 Water	8370255
TowerEff-0516 Total Metals Water	8370256
TowerEff-0516 Dissolved Metals Water	8370257
TowerEfD-0516 Water	8370258
Trip Blank Water	8370259

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	Attn: John Rusoff
Electronic Copy To	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1658369

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:

SW-846 6010C, Metals

Batch #: 161300635005 (Sample number(s): 8370252-8370253, 8370256-8370257 UNSPK: P368188 BKG: P368188)

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

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

SW-846 6010C, Metals Dissolved

Batch #: 161300635005 (Sample number(s): 8370252-8370253, 8370256-8370257 UNSPK: P368188 BKG: P368188)

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

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

EPA 376.1, Wet Chemistry

Batch #: 16131133302A (Sample number(s): 8370251, 8370255 BKG: P369685)

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

Sample Description: TowerInf-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370251
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:10 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWIN

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**21**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**11**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00228	**Sulfate**	14808-79-8	**8.9**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Description: TowerInf-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370251
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:10 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWIN

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 13:50	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 13:50	Kerri E Legerlotz	1
00228	Sulfate	EPA 300.0	1	16128667901B	05/08/2016 00:35	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16132049501B	05/11/2016 06:16	James S Mathiot	1
01333	Sulfide	EPA 376.1	1	16131133302A	05/10/2016 22:55	Hannah M Royer	1

Sample Description: TowerInf-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370252
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:10 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**1.46**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161300635005	05/17/2016 08:22	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635005	05/15/2016 06:17	James L Mertz	1

Sample Description: TowerInf-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370253
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:10 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.479**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161300635005	05/17/2016 08:25	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635005	05/15/2016 06:17	James L Mertz	1

Sample Description: TowerInD-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370254
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:12 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWID

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**7.5**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.1**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**11**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 14:10	Kerri E Legerlotz	1

Sample Description: TowerInD-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370254
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:12 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWID

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 14:10	Kerri E Legerlotz	1

Sample Description: TowerEff-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370255
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:35 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.4**		0.10	1
01506	Nitrite Nitrogen	14797-65-0	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**8.8**		1.0	1
	EPA 365.1		**mg/l**		**mg/l**	
00345	Total Phosphorus as PO4 water	14265-44-2	0.31	U	0.31	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Description: TowerEff-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370255
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:35 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 376.1**		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1
	SM 4500-NH3 D-1997		**mg/l**		**mg/l**	
12677	Ammonia-Nitrogen	7664-41-7	0.20	U	0.20	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 14:30	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 14:30	Kerri E Legerlotz	1
00368	Nitrate Nitrogen	EPA 300.0	1	16128667901B	05/07/2016 16:21	Drew M Gerhart	1
01506	Nitrite Nitrogen	EPA 300.0	1	16128667901B	05/07/2016 16:21	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16128667901B	05/07/2016 16:21	Drew M Gerhart	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	16140110102A	05/20/2016 12:13	Dein K Bernot	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16132049501B	05/11/2016 06:29	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	16140110102A	05/19/2016 18:00	Barbara A Washington	1
01333	Sulfide	EPA 376.1	1	16131133302A	05/10/2016 22:55	Hannah M Royer	1
12677	Ammonia-Nitrogen	SM 4500-NH3 D-1997	1	16134010201A	05/13/2016 14:13	Michelle L Lalli	1

Sample Description: TowerEff-0516 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370256
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:35 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	161300635005	05/17/2016 08:28	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635005	05/15/2016 06:17	James L Mertz	1

Sample Description: TowerEff-0516 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370257
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:35 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	161300635005	05/17/2016 08:31	Katlin N Cataldi	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	161300635005	05/15/2016 06:17	James L Mertz	1

Sample Description: TowerEfD-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370258
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 09:45 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWED

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 14:51	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 14:51	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370259
LL Group # 1658369
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 04/20/2016

The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/23/2016 08:35

TOWTB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 11:48	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 11:48	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/23/2016 08:35

Group Number: 1658369

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: H161341AA	Sample number(s): 8370251,8370254-8370255,8370258-8370259		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
	mg/l		mg/l
Batch number: 161300635005	Sample number(s): 8370252-8370253,8370256-8370257		
Iron	0.400	U	0.400

*- 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: 05/23/2016 08:35

Group Number: 1658369

Method Blank (continued)

Analysis Name	Result mg/l		LOQ mg/l
Batch number: 16128667901B	Sample number(s): 8370251,8370255		
Nitrate Nitrogen	0.10	U	0.10
Nitrite Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16132049501B	Sample number(s): 8370251,8370255		
Total Organic Carbon	1.0	U	1.0
Batch number: 16140110102A	Sample number(s): 8370255		
Total Phosphorus as PO4 water	0.31	U	0.31
Batch number: 16131133302A	Sample number(s): 8370251,8370255		
Sulfide	2.0	U	2.0
Batch number: 16134010201A	Sample number(s): 8370255		
Ammonia-Nitrogen	0.20	U	0.20

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: H161341AA	Sample number(s): 8370251,8370254-8370255,8370258-8370259								
Acetone	37.5	35.61	37.5	35.38	95	94	65-124	1	30
Benzene	5.00	4.97	5.00	4.82	99	96	80-120	3	30
Bromodichloromethane	5.00	5.02	5.00	4.81	100	96	80-120	4	30
Bromoform	5.00	4.85	5.00	4.91	97	98	62-128	1	30
Bromomethane	5.00	5.17	5.00	4.88	103	98	71-126	6	30
2-Butanone	37.5	38.29	37.5	36.33	102	97	66-135	5	30
Carbon Disulfide	5.00	4.57	5.00	4.40	91	88	65-120	4	30
Carbon Tetrachloride	5.00	5.15	5.00	4.95	103	99	65-134	4	30
Chlorobenzene	5.00	4.91	5.00	4.89	98	98	80-120	0	30
Chloroethane	5.00	4.70	5.00	4.57	94	91	71-122	3	30
Chloroform	5.00	4.98	5.00	4.81	100	96	80-120	4	30
Chloromethane	5.00	4.30	5.00	4.10	86	82	63-121	5	30
Dibromochloromethane	5.00	4.85	5.00	4.83	97	97	68-131	1	30
1,1-Dichloroethane	5.00	4.85	5.00	4.62	97	92	75-120	5	30
1,2-Dichloroethane	5.00	4.75	5.00	4.64	95	93	72-127	2	30
1,1-Dichloroethene	5.00	5.19	5.00	5.05	104	101	70-120	3	30
cis-1,2-Dichloroethene	5.00	5.28	5.00	5.01	106	100	80-120	5	30
trans-1,2-Dichloroethene	5.00	5.27	5.00	5.05	105	101	80-120	4	30
1,2-Dichloropropane	5.00	4.97	5.00	4.77	99	95	80-120	4	30
cis-1,3-Dichloropropene	5.00	4.86	5.00	4.55	97	91	80-124	7	30
trans-1,3-Dichloropropene	5.00	4.66	5.00	4.49	93	90	77-121	4	30
Ethylbenzene	5.00	4.84	5.00	4.77	97	95	80-120	2	30
2-Hexanone	25	25.35	25	23.98	101	96	73-128	6	30
4-Methyl-2-pentanone	25	26.24	25	24.33	105	97	71-129	8	30
Methylene Chloride	5.00	5.00	5.00	4.87	100	97	80-120	2	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: 05/23/2016 08:35

Group Number: 1658369

LCS/LCSD (continued)

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					
Styrene	5.00	4.95	5.00	4.90	99	98	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.31	5.00	4.54	86	91	80-120	5	30
Tetrachloroethene	5.00	5.01	5.00	4.98	100	100	80-120	1	30
Toluene	5.00	4.86	5.00	4.77	97	95	80-120	2	30
112Trichloro122Trifluoroethane	5.00	5.11	5.00	4.98	102	100	75-120	3	30
1,1,1-Trichloroethane	5.00	4.95	5.00	4.77	99	95	70-124	4	30
1,1,2-Trichloroethane	5.00	4.90	5.00	4.79	98	96	80-120	2	30
Trichloroethene	5.00	5.31	5.00	5.08	106	102	80-120	4	30
Trichlorofluoromethane	5.00	4.88	5.00	4.64	98	93	64-133	5	30
Vinyl Acetate	12.5	12.77	12.5	12.88	102	103	40-185	1	30
Vinyl Chloride	5.00	4.67	5.00	4.57	93	91	62-128	2	30
m+p-Xylene	10	9.75	10	9.79	97	98	80-120	0	30
o-Xylene	5.00	4.88	5.00	4.81	98	96	80-120	1	30
	mg/l	mg/l	mg/l	mg/l					
Batch number: 161300635005	Sample number(s): 8370252-8370253,8370256-8370257								
Iron	1.00	1.14			114		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16128667901B	Sample number(s): 8370251,8370255								
Nitrate Nitrogen	0.750	0.742	0.750	0.741	99	99	90-110	0	20
Nitrite Nitrogen	0.750	0.745	0.750	0.734	99	98	90-110	1	20
Sulfate	7.50	7.46	7.50	7.42	100	99	90-110	1	20
Batch number: 16132049501B	Sample number(s): 8370251,8370255								
Total Organic Carbon	25	24.67			99		91-113		
Batch number: 16140110102A	Sample number(s): 8370255								
Total Phosphorus as PO4 water	3.53	3.43			97		90-110		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16131133302A	Sample number(s): 8370251,8370255								
Sulfide	20	18.84	20	18.63	94	93	80-120	1	4
Batch number: 16134010201A	Sample number(s): 8370255								
Ammonia-Nitrogen	5.00	4.97			99		78-128		

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 161300635005	Sample number(s): 8370252-8370253,8370256-8370257 UNSPK: P368188									

*- 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: 05/23/2016 08:35

Group Number: 1658369

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Iron	0.497	1.00	1.37	1.00	1.08	88	58*	75-125	24*	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16128667901B	Sample number(s): 8370251,8370255 UNSPK: 8370255									
Nitrate Nitrogen	2.39	1.00	3.36			97		90-110		
Nitrite Nitrogen	0.10 U	1.00	0.938			94		90-110		
Sulfate	8.81	10	18.74			99		90-110		
Batch number: 16132049501B	Sample number(s): 8370251,8370255 UNSPK: 8370255									
Total Organic Carbon	1.0 U	10	9.79			98		91-113		
Batch number: 16140110102A	Sample number(s): 8370255 UNSPK: 8370255									
Total Phosphorus as PO4 water	0.31 U	6.14	6.20			101		90-110		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16134010201A	Sample number(s): 8370255 UNSPK: P352296									
Ammonia-Nitrogen	21	250	263	250	273.5	97	101	78-128	4	15

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 161300635005	Sample number(s): 8370252-8370253,8370256-8370257 BKG: P368188			
Iron	0.497	0.498	0 (1)	20
	mg/l	mg/l		
Batch number: 16128667901B	Sample number(s): 8370251,8370255 BKG: 8370255			
Nitrate Nitrogen	2.39	2.37	1	15
Nitrite Nitrogen	0.10 U	0.10 U	0 (1)	15
Sulfate	8.81	8.87	1	15
Batch number: 16132049501B	Sample number(s): 8370251,8370255 BKG: 8370255			
Total Organic Carbon	1.0 U	1.0 U	0 (1)	3
Batch number: 16140110102A	Sample number(s): 8370255 BKG: 8370255			
Total Phosphorus as PO4 water	0.31 U	0.31 U	0 (1)	4
	mg/l	mg/l		
Batch number: 16131133302A	Sample number(s): 8370251,8370255 BKG: P369685			
Sulfide	2.0 U	0.701	200* (1)	20

*- 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: 05/23/2016 08:35

Group Number: 1658369

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: 16134010201A	Sample number(s): 8370255 BKG: P352296			
Ammonia-Nitrogen	21	20	5 (1)	20

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 Boeing 38
Batch number: H161341AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8370251	97	95	102	93
8370254	100	98	99	93
8370255	98	95	100	92
8370258	99	99	101	93
8370259	104	102	96	96
Blank	100	97	99	92
LCS	105	104	96	97
LCSD	102	102	99	96
Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1658369 Sample # 837025 1-59

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): _____
Sampler: EMW # of Coolers: 1

(4) Analyses Requested

(5) Remarks/Comments

Include John Rusoff on COC results.

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOC (38 list)	TOC	Sulfate	Sulfide	Total Iron	Dissolved Iron	Total Phosphorous as P04	Ammonia	Nitrite	Nitrate		
EMW ~~EMW~~ TowerInF-0516	5/6/16	0910	H20	10	X	X	X	X	X	X						
TowerInD-0516	5/6/16	0912		3	X											
TowerEff-0516	5/6/16	0935		16	X	X	X	X	X	X	X	X	X	X		
TowerEFD-0516	5/6/16	0945		3	X											
Trip Blanks	4/20/16	—	↓	2	X											

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

Relinquished by: E Waibel	Date/Time 5/6/16 1230	Received by:	Date/Time (7)
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 5-7-16 / 940
Relinquished by commercial carrier (circle): UPS FedEx Other: _____		Temperature upon Receipt: 3.4 °C	
		Custody Seals Intact?: Yes No	

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Sample Administration Receipt Documentation Log

Doc Log ID: 145739

Group Number(s): 1658369

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	05/07/2016 9:40
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	3
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 Joseph Huber (7831) at 09:58 on 05/07/2016

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	3.4	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T 717-656-2300
F 717-656-2681
www.LancasterLabs.com

GH 1658369


LARRY STARKEY
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EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801
40 LBS
RS
DWT: 25,14,14
SHIP TO:
SAMPLE ADMINASTRATION
(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946
PA 175 9-37
UPS NEXT DAY AIR
1 S
TRACKING #: 1Z RV3 069 Y0 4320 6577
BILLING: P/P
DESC: SAMPLING
RETURN SERVICE
Saturday
Delivery
Place directly below address label

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 ≥ 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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: May 16, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 05/07/2016
Group Number: 1658370
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-83i-0516 Water	8370260
Trip Blank Water	8370261

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1658370

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:

No additional comments are necessary.

Sample Description: BOP-83i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370260
LL Group # 1658370
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 08:35 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/16/2016 11:53

BO83I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**9.8**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 15:11	Kerri E Legerlotz	1

Sample Description: BOP-83i-0516 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370260
LL Group # 1658370
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 05/06/2016 08:35 by EMW The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/16/2016 11:53

BO83I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 15:11	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8370261
LL Group # 1658370
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 04/20/2016

The Boeing Company

Submitted: 05/07/2016 09:40
Reported: 05/16/2016 11:53

BO-TB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 12:08	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 12:08	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/16/2016 11:53

Group Number: 1658370

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: H161341AA	Sample number(s): 8370260-8370261		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

*- 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: 05/16/2016 11:53

Group Number: 1658370

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: H161341AA	Sample number(s): 8370260-8370261								
Acetone	37.5	35.61	37.5	35.38	95	94	65-124	1	30
Benzene	5.00	4.97	5.00	4.82	99	96	80-120	3	30
Bromodichloromethane	5.00	5.02	5.00	4.81	100	96	80-120	4	30
Bromoform	5.00	4.85	5.00	4.91	97	98	62-128	1	30
Bromomethane	5.00	5.17	5.00	4.88	103	98	71-126	6	30
2-Butanone	37.5	38.29	37.5	36.33	102	97	66-135	5	30
Carbon Disulfide	5.00	4.57	5.00	4.40	91	88	65-120	4	30
Carbon Tetrachloride	5.00	5.15	5.00	4.95	103	99	65-134	4	30
Chlorobenzene	5.00	4.91	5.00	4.89	98	98	80-120	0	30
Chloroethane	5.00	4.70	5.00	4.57	94	91	71-122	3	30
Chloroform	5.00	4.98	5.00	4.81	100	96	80-120	4	30
Chloromethane	5.00	4.30	5.00	4.10	86	82	63-121	5	30
Dibromochloromethane	5.00	4.85	5.00	4.83	97	97	68-131	1	30
1,1-Dichloroethane	5.00	4.85	5.00	4.62	97	92	75-120	5	30
1,2-Dichloroethane	5.00	4.75	5.00	4.64	95	93	72-127	2	30
1,1-Dichloroethene	5.00	5.19	5.00	5.05	104	101	70-120	3	30
cis-1,2-Dichloroethene	5.00	5.28	5.00	5.01	106	100	80-120	5	30
trans-1,2-Dichloroethene	5.00	5.27	5.00	5.05	105	101	80-120	4	30
1,2-Dichloropropane	5.00	4.97	5.00	4.77	99	95	80-120	4	30
cis-1,3-Dichloropropene	5.00	4.86	5.00	4.55	97	91	80-124	7	30
trans-1,3-Dichloropropene	5.00	4.66	5.00	4.49	93	90	77-121	4	30
Ethylbenzene	5.00	4.84	5.00	4.77	97	95	80-120	2	30
2-Hexanone	25	25.35	25	23.98	101	96	73-128	6	30
4-Methyl-2-pentanone	25	26.24	25	24.33	105	97	71-129	8	30
Methylene Chloride	5.00	5.00	5.00	4.87	100	97	80-120	2	30
Styrene	5.00	4.95	5.00	4.90	99	98	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.31	5.00	4.54	86	91	80-120	5	30
Tetrachloroethene	5.00	5.01	5.00	4.98	100	100	80-120	1	30
Toluene	5.00	4.86	5.00	4.77	97	95	80-120	2	30
112Trichloro122Trifluoroethane	5.00	5.11	5.00	4.98	102	100	75-120	3	30
1,1,1-Trichloroethane	5.00	4.95	5.00	4.77	99	95	70-124	4	30
1,1,2-Trichloroethane	5.00	4.90	5.00	4.79	98	96	80-120	2	30
Trichloroethene	5.00	5.31	5.00	5.08	106	102	80-120	4	30
Trichlorofluoromethane	5.00	4.88	5.00	4.64	98	93	64-133	5	30
Vinyl Acetate	12.5	12.77	12.5	12.88	102	103	40-185	1	30
Vinyl Chloride	5.00	4.67	5.00	4.57	93	91	62-128	2	30
m+p-Xylene	10	9.75	10	9.79	97	98	80-120	0	30
o-Xylene	5.00	4.88	5.00	4.81	98	96	80-120	1	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: 05/16/2016 11:53

Group Number: 1658370

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 Boeing 38
Batch number: H161341AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8370260	97	95	102	93
8370261	105	104	96	97
Blank	100	97	99	92
LCS	105	104	96	97
LCSD	102	102	99	96
Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 17419 For Eurofins Lancaster Laboratories use only Group # 1658370 Sample # 8370260-01

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): ____
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOC (38 List)	(4) Analyses Requested	(5) Remarks/Comments
BOP-83i-0516	5/6/16	0835	H2O	3	X		
Trip Blank	4/20/16	—	H2O	1	X		

(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: ____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
D Waibel	5/6/16 1230		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 5-7-16 / 940

Relinquished by commercial carrier (circle): (UPS) FedEx Other: ____

Temperature upon Receipt: 3.4 °C

Custody Seals Intact?: (Yes) No

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Sample Administration Receipt Documentation Log

Doc Log ID: 145739

Group Number(s): 1658370

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	05/07/2016 9:40
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	3
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 Joseph Huber (7831) at 09:58 on 05/07/2016

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	3.4	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T 717-656-2300
F 717-656-2681
www.LancasterLabs.cor

G# 1658370


LARRY STARKEY
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LANCASTER PA 17601-5946
PA 175 9-37
UPS NEXT DAY AIR
1 S
TRACKING #: 1Z RV3 069 Y0 4320 6577
BILLING: P/P
DESC: SAMPLING
RETURN SERVICE
Saturday
Delivery

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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 ≥ 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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3Q16 TGA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Danille Jorgensen

DATE: September 16, 2016

RE: **Boeing Portland (TGA)**
Third Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 54 groundwater samples, 4 field duplicates, 8 trip blanks, and 22 vapor samples collected during the third quarter 2016 TGA sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental (LLI), located in Lancaster, Pennsylvania, and Eurofins Air Toxics (Air Toxics) located in Folsom, California. This data quality evaluation covers LLI data packages 1690665, 1690791, 1291407, 1693021, 1693902, 1694313, 1695443, and 1698272, and Air Toxics data package 1608175. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs], US Environmental Protection Agency [EPA] Method SW8260C); diesel- and motor oil-range petroleum hydrocarbons (TPH-D and TPH-O, respectively; Washington State Department of Ecology [Ecology]-approved Method NWTPH-Dx); conventional inorganic parameters including N-Nitrate, N-Nitrite, and sulfate (EPA Method 300.0); sulfide (EPA Method 376.1); total and dissolved iron (EPA Method 6010C); total phosphorous (EPA Method 365.1); N-Ammonia (Method SM 4500 NH3 D); total organic carbon (Method SM 5310 C-2000); hexane extractable material (HEM) and silica gel-treated HEM (SGT-HEM; EPA Method 1664A); and methane, ethane, ethane, and acetylene (MEEA; Modified RSK 175). Samples submitted to Air Toxics were analyzed for VOCs (Method TO-15).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008) and the *National Functional Guidelines for Inorganic Data Review* (EPA 2004, 2010). Landau Associates performed an EPA-equivalent Level II verification validation and validation check on each laboratory data package, which included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.

- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. Data qualifiers are summarized in Table 1.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition. All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperatures were recorded. The coolers were received with temperatures within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times. No qualification of the data was necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for analysis. Target analytes were not detected at concentrations greater than the reporting limits in the associated method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

Eight trip blanks were submitted to the laboratory for VOC analysis with the sample batches. Target analytes were not detected at concentrations greater than the reporting limits in the associated trip blanks. No field equipment blanks were submitted for analysis with these sample batches.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the organics analyses. Recovery values for the surrogate spikes were within the current laboratory-specified control limits, with the following exceptions:

- Recovery of the surrogate propene associated with the MEEA analysis of sample BOP-88i-0816 in data package 1693021 exceeded the laboratory-specified control limit; the associated detected ethene concentration was qualified as estimated (J) due to potential high analytical bias, as indicated in Table 1.
- Sample BOP-88i-0816 in data package 1693021 was re-analyzed to confirm surrogate recovery issues as noted above; the re-analysis results should not be reported, and the original and dilution results reported, as necessary, as indicated in Table 1.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

At least one MS and/or laboratory replicate sample were analyzed with the conventional parameters and/or metals analyses in data packages 1690665, 1691407, 1693021, 1693902, and 1694313. The recovery values for each required spiking compound and/or the relative percent differences (RPDs) between the laboratory replicate results were within the current project-specified and/or laboratory-specified control limits for all project samples with the following exceptions:

- The MS/MSD recoveries for iron associated with the total and dissolved metals analyses of sample BOP-72i-0816 in data package 1693021 and sample E-2-0816 in data package 1693902 either exceeded or were below the laboratory-specified control limit. The original sample concentration was equal to or greater than four times the associated spike concentration; therefore, no qualification of the data was necessary.
- The MS recovery for total organic carbon associated with the conventionals analysis of sample E-4-0816 in data package 1693902 exceeded the laboratory-specified control limit. Total organic carbon was not detected in the associated sample; therefore, no qualification of the data was necessary.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for analysis. Recoveries and relative percent differences (RPDs) for the laboratory control samples and associated duplicates were within the current laboratory-specified control limits, with the following exceptions:

- The LCS recovery for diesel-range petroleum hydrocarbons in data package 1691407 was below the laboratory-specified control limit. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The LCS/LCSD RPD for diesel-range petroleum hydrocarbons in data package 1691407 exceeded the laboratory-specified control limit. The associated detections of diesel-range hydrocarbons were qualified as estimated (J), as indicated in Table 1.
- The LCS recoveries for 1,1-dichloroethene and/or 1,1,2-trichloro-1,2,2-trifluoroethane associated with the VOC analyses in data packages 1693021, 1693902, 1694313, and 1695443 exceeded the laboratory-specified control limit. The affected compounds were not detected in the associated samples; therefore, no qualification of the data was necessary.

- The LCS/LCSD recoveries for 2-hexanone and/or 4-methyl-2-pentanone associated with the VOC analyses in data packages 1693021, 1693902, 1694313, and 1695443 were below the laboratory-specified control limit. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.

Blind Field Duplicate Results

As specified in the QAPP, blind field duplicate samples were collected at a rate of one blind field duplicate sample per 20 samples, but not less than one blind field duplicate per sampling round. Four pairs of blind field duplicate water samples (TowerInf-0816/TowerInD-0816, TowerEff-0816/TowerEfD-0816, BOP-W-0816/BOP-07i-0816, and BOP-X-0816/BOP-59i-0816) were submitted for analysis with data packages 1690665, 1693021, and 1694313.

A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for the duplicate sample pairs submitted for analysis were within the project-specified control limits, with the following exceptions:

- The RPDs for 1,1-dichloroethene and cis-1,2-dichloroethene associated with the VOC analysis of sample pair TowerInf-0816/TowerInD-0816 in data package 1690665 exceeded the laboratory-specified control limit; the associated sample results were qualified as estimated (J), as indicated in Table 1.
- The RPDs for cis-1,2-dichloroethene and tetrachloroethene associated with the VOC analysis of sample pair BOP-W-0816/BOP-07i-0816 in data package 1694313 exceeded the laboratory-specified control limit; the associated sample results were qualified as estimated (J), as indicated in Table 1.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where dilution was performed due to the presence of high level target species or sample matrix interference.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for these sample batches. Based on the laboratory's case narratives, continuing calibration verification (CCV) recovery results were within laboratory-specified control limits

- The CCVs were high for Freon 113 in data packages 1690665 and 1691407. Freon 113 was not detected in the associated samples; therefore, no qualification of the data was necessary.
- The CCV was high for Freon 113 in data package 1690791. Detected concentrations of Freon 113 in the associated samples were qualified as estimated (J), as indicated in Table 1.

- The CCV was high for several compounds in data packages 1693021 and 1693902. The affected compounds were not detected in the associated samples; therefore, no qualification of the data was necessary.
- The CCV was low for several compounds in data packages 1693021, 1693902, 1694313, and 1695443. The associated sample results were qualified as estimated, as indicated in Table 1.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates, laboratory duplicates, matrix spike duplicates, and blind field duplicates. Data accuracy was evaluated through laboratory control samples, matrix spikes, and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



Kristi Schultz
Data Specialist



Danille Jorgensen
Environmental Data Manager

DRJ/kes
[P:\025\116\FILERM\T\TGA\DATA\DV TGA\2016\3Q16\TGA 3Q16 TM.DOCX]

References

EPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. edited by Office of Emergency and Remedial Response. Washington, DC: US Environmental Protection Agency.

EPA. 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. edited by Office of Superfund Remediation and Technology Innovation: US Environmental Protection Agency.

EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

EPA. 2010. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1690665	1,1-Dichloroethene	2.2	J	TowerInf-0816	High field duplicate RPD
1690665	1,1-Dichloroethene	2.7	J	TowerInd-0816	High field duplicate RPD
1690665	cis-1,2-Dichloroethene	2.1	J	TowerInf-0816	High field duplicate RPD
1690665	cis-1,2-Dichloroethene	1.7	J	TowerInd-0816	High field duplicate RPD
1690791	Freon 113	0.6	J	D-08i-0816	High continuing calibration recovery
1691407	DRO C12-C24	0.095 U	UJ	LAI-1-0816	Low LCS recovery
1691407	DRO C12-C24	0.10 U	UJ	LAI-2-0816	Low LCS recovery
1691407	DRO C12-C24	0.095 U	UJ	LAI-3-0816	Low LCS recovery
1691407	DRO C12-C24	1.0	J	LAI-4-0816	Low LCS recovery; High LCS/LCSD RPD
1691407	DRO C12-C24	0.097 U	UJ	LAI-5-0816	Low LCS recovery
1691407	DRO C12-C24	0.095 U	UJ	LAI-6-0816	Low LCS recovery
1691407	DRO C12-C24	0.096 U	UJ	LAI-7-0816	Low LCS recovery
1693021	Chloromethane	0.5 U	UJ	BOP-75i-0816	Low continuing calibration recovery
1693021	Chloroethane	0.5	J	BOP-75i-0816	Low continuing calibration recovery
1693021	2-Butanone	5.0 U	UJ	BOP-75i-0816	Low continuing calibration recovery
1693021	4-Methyl-2-pentanone	5.0 U	UJ	BOP-75i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693021	2-Hexanone	5.0 U	UJ	BOP-75i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693021	Acetone	65	J	BOP-75i-0816	Low continuing calibration recovery
1693021	Chloromethane	0.5 U	UJ	BOP-76i-0816	Low continuing calibration recovery
1693021	Chloroethane	0.5 U	UJ	BOP-76i-0816	Low continuing calibration recovery
1693021	2-Butanone	5.0 U	UJ	BOP-76i-0816	Low continuing calibration recovery
1693021	4-Methyl-2-pentanone	5.0 U	UJ	BOP-76i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693021	2-Hexanone	5.0 U	UJ	BOP-76i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693021	Acetone	56	J	BOP-76i-0816	Low continuing calibration recovery
1693021	2-Butanone	42	J	BOP-77i-0816	Low continuing calibration recovery
1693021	4-Methyl-2-pentanone	5.0 U	UJ	BOP-77i-0816	Low continuing calibration recovery
1693021	2-Hexanone	6.0	J	BOP-77i-0816	Low continuing calibration recovery
1693021	Chloromethane	0.5 U	UJ	BOP-74i-0816	Low continuing calibration recovery
1693021	Chloroethane	0.5 U	J	BOP-74i-0816	Low continuing calibration recovery
1693021	2-Butanone	58	J	BOP-74i-0816	Low continuing calibration recovery
1693021	4-Methyl-2-pentanone	5.0 U	UJ	BOP-74i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693021	2-Hexanone	5.0 U	UJ	BOP-74i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693021	Acetone	65	J	BOP-74i-0816	Low continuing calibration recovery
1693021	2-Butanone	5.0 U	UJ	BOP-88i-0816	Low continuing calibration recovery
1693021	4-Methyl-2-pentanone	5.0 U	UJ	BOP-88i-0816	Low continuing calibration recovery
1693021	2-Hexanone	320	J	BOP-88i-0816	Low continuing calibration recovery
1693021	Ethene	9.3	J	BOP-88i-0816	High surrogate recovery
1693021	Methane	10000 E	DNR	BOP-88i-0816	Do not report; use dilution analysis
1693021	Acetylene	500 U	DNR	BOP-88i-0816 DL	Do not report; use original analysis
1693021	Ethane	500 U	DNR	BOP-88i-0816 DL	Do not report; use original analysis
1693021	Ethene	500 U	DNR	BOP-88i-0816 DL	Do not report; use original analysis
1693021	Acetylene	5.0 U	DNR	BOP-88i-0816 RE	Do not report; use original analysis
1693021	Ethane	5.0 U	DNR	BOP-88i-0816 RE	Do not report; use original analysis
1693021	Ethene	13	DNR	BOP-88i-0816 RE	Do not report; use original analysis
1693021	Methane	10000 E	DNR	BOP-88i-0816 RE	Do not report; use dilution analysis
1693902	Chloromethane	0.5 U	UJ	E-15-0816	Low continuing calibration recovery
1693902	Chloroethane	0.5 U	UJ	E-15-0816	Low continuing calibration recovery
1693902	Acetone	5.0 U	UJ	E-15-0816	Low continuing calibration recovery
1693902	2-Butanone	5.0 U	UJ	E-15-0816	Low continuing calibration recovery
1693902	4-Methyl-2-pentanone	5.0 U	UJ	E-15-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693902	2-Hexanone	5.0 U	UJ	E-15-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693902	Acetone	5.0 U	UJ	E-4-0816	Low continuing calibration recovery
1693902	Chloromethane	0.5 U	UJ	E-16-0816	Low continuing calibration recovery
1693902	Chloroethane	0.5 U	UJ	E-16-0816	Low continuing calibration recovery
1693902	Acetone	5.0 U	UJ	E-16-0816	Low continuing calibration recovery
1693902	2-Butanone	5.0 U	UJ	E-16-0816	Low continuing calibration recovery
1693902	4-Methyl-2-pentanone	5.0 U	UJ	E-16-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693902	2-Hexanone	5.0 U	UJ	E-16-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693902	Chloromethane	0.5 U	UJ	E-12-0816	Low continuing calibration recovery
1693902	Chloroethane	0.5 U	UJ	E-12-0816	Low continuing calibration recovery
1693902	Acetone	5.0 U	UJ	E-12-0816	Low continuing calibration recovery

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1693902	2-Butanone	5.0 U	UJ	E-12-0816	Low continuing calibration recovery
1693902	4-Methyl-2-pentanone	5.0 U	UJ	E-12-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693902	2-Hexanone	5.0 U	UJ	E-12-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1693902	Acetone	5.0 U	UJ	DP1-0816	Low continuing calibration recovery
1693902	4-Methyl-2-pentanone	5.0 U	UJ	E-2-0816	Low LCS/LCSD recovery
1693902	2-Hexanone	5.0 U	UJ	E-2-0816	Low LCS/LCSD recovery
1694313	2-Butanone	5.0 U	UJ	BOP-83i-0816	Low continuing calibration recovery
1694313	4-Methyl-2-pentanone	5.0 U	UJ	BOP-83i-0816	Low continuing calibration recovery
1694313	2-Hexanone	5.0 U	UJ	BOP-83i-0816	Low continuing calibration recovery
1694313	2-Butanone	5.0 U	UJ	BOP-82i-0816	Low continuing calibration recovery
1694313	4-Methyl-2-pentanone	5.0 U	UJ	BOP-82i-0816	Low continuing calibration recovery
1694313	2-Hexanone	5.0 U	UJ	BOP-82i-0816	Low continuing calibration recovery
1694313	Chloromethane	0.5 U	UJ	BOP-80i-0816	Low continuing calibration recovery
1694313	Chloroethane	0.5 U	UJ	BOP-80i-0816	Low continuing calibration recovery
1694313	Acetone	32	J	BOP-80i-0816	Low continuing calibration recovery
1694313	2-Butanone	5.0 U	UJ	BOP-80i-0816	Low continuing calibration recovery
1694313	4-Methyl-2-pentanone	5.0 U	UJ	BOP-80i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1694313	2-Hexanone	5.0 U	UJ	BOP-80i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1694313	Acetone	10 U	UJ	BOP-07i-0816	Low continuing calibration recovery
1694313	Chloromethane	0.5 U	UJ	BOP-16i-0816	Low continuing calibration recovery
1694313	Chloroethane	0.5 U	UJ	BOP-16i-0816	Low continuing calibration recovery
1694313	Acetone	5.0 U	UJ	BOP-16i-0816	Low continuing calibration recovery
1694313	2-Butanone	5.0 U	UJ	BOP-16i-0816	Low continuing calibration recovery
1694313	4-Methyl-2-pentanone	5.0 U	UJ	BOP-16i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1694313	2-Hexanone	5.0 U	UJ	BOP-16i-0816	Low continuing calibration recovery; Low LCS/LCSD recovery
1694313	2-Butanone	5.0 U	UJ	BOP-81i-0816	Low continuing calibration recovery
1694313	4-Methyl-2-pentanone	5.0 U	UJ	BOP-81i-0816	Low continuing calibration recovery
1694313	2-Hexanone	5.0 U	UJ	BOP-81i-0816	Low continuing calibration recovery; Low LCS recovery
1694313	Acetone	5.0 U	UJ	BOP-W-0816	Low continuing calibration recovery
1694313	cis-1,2-Dichloroethene	14	J	BOP-07i-0816	High field duplicate RPD
1694313	cis-1,2-Dichloroethene	11	J	BOP-W-0816	High field duplicate RPD
1694313	Tetrachloroethene	3.2	J	BOP-07i-0816	High field duplicate RPD
1694313	Tetrachloroethene	2.6	J	BOP-W-0816	High field duplicate RPD
1694313	4-Methyl-2-pentanone	5.0 U	UJ	BOP-07i-0816	Low LCS/LCSD recovery
1694313	2-Hexanone	5.0 U	UJ	BOP-07i-0816	Low LCS/LCSD recovery

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1695443	Acetone	5.0 U	UJ	E-5-0816	Low continuing calibration recovery
1695443	Acetone	5.0 U	UJ	E-7-0816	Low continuing calibration recovery
1695443	2-Butanone	5.0 U	UJ	E-8-0816	Low continuing calibration recovery
1695443	4-Methyl-2-pentanone	5.0 U	UJ	E-8-0816	Low continuing calibration recovery
1695443	2-Hexanone	5.0 U	UJ	E-8-0816	Low continuing calibration recovery; Low LCSD recovery
1695443	2-Butanone	5.0 U	UJ	E-9-0816	Low continuing calibration recovery
1695443	4-Methyl-2-pentanone	5.0 U	UJ	E-9-0816	Low continuing calibration recovery
1695443	2-Hexanone	5.0 U	UJ	E-9-0816	Low continuing calibration recovery; Low LCSD recovery

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

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8/19/2016
Ms. Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue South

Edmonds WA 98020

Project Name: Boeing of Portland
Project #: 025116.116.412
Workorder #: 1608175

Dear Ms. Chris Kimmel

The following report includes the data for the above referenced project for sample(s) received on 8/9/2016 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1608175

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	08/09/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	08/19/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SVE-Inf-0816	TO-15	3.9 "Hg	15 psi
02A	SVE-Gacl-0816	TO-15	2.2 "Hg	14.9 psi
03A	SVE-Eff-0816	TO-15	2.6 "Hg	14.8 psi
04A	BOP-78i-0816	TO-15	4.9 "Hg	15.2 psi
05A	BOP-79i-0816	TO-15	3.3 "Hg	15 psi
06A	BOP-84i-0816	TO-15	2 "Hg	14.8 psi
07A	BOP-85i-0816	TO-15	2.4 "Hg	14.5 psi
08A	BOP-86i-0816	TO-15	2.4 "Hg	15.1 psi
09A	BOP-87i-0816	TO-15	5.5 "Hg	14.9 psi
10A	BOP-88i-0816	TO-15	3.5 "Hg	14.9 psi
11A	VOW-16-0816	TO-15	3.3 "Hg	14.9 psi
12A	VOW-17-0816	TO-15	2 "Hg	15.4 psi
13A	VOW-18-0816	TO-15	4.9 "Hg	15 psi
14A	VP-1-0816	TO-15	4.9 "Hg	15.1 psi
15A	VP-2-0816	TO-15	4.7 "Hg	14.9 psi
16A	VP-3-0816	TO-15	4.5 "Hg	14.7 psi
17A	VP-4-0816	TO-15	5.9 "Hg	14.9 psi
18A	VP-5-0816	TO-15	6.3 "Hg	15.1 psi
19A	VP-6-0816	TO-15	2.4 "Hg	15 psi
20A	VP-7-0816	TO-15	2.2 "Hg	15 psi
21A	VP-8-0816	TO-15	4.5 "Hg	14.9 psi
22A	VP-9-0816	TO-15	3.9 "Hg	15.2 psi
23A	Lab Blank	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1608175

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	08/09/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	08/19/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
23B	Lab Blank	TO-15	NA	NA
24A	CCV	TO-15	NA	NA
24B	CCV	TO-15	NA	NA
25A	LCS	TO-15	NA	NA
25AA	LCSD	TO-15	NA	NA
25B	LCS	TO-15	NA	NA
25BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo

DATE: 08/19/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Landau Associates, Inc.
Workorder# 1608175

Twenty-two 1 Liter Summa Canister samples were received on August 09, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample VP-8-0816 due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVE-Inf-0816

Lab ID#: 1608175-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	1.3	6.3	7.2
Trichloroethene	1.2	45	6.2	240
Tetrachloroethene	1.2	13	7.9	90

Client Sample ID: SVE-Gacl-0816

Lab ID#: 1608175-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	2.1	5.9	11
Trichloroethene	1.1	38	5.8	200
Tetrachloroethene	1.1	14	7.4	94

Client Sample ID: SVE-Eff-0816

Lab ID#: 1608175-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.1	14	7.5	99

Client Sample ID: BOP-78i-0816

Lab ID#: 1608175-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	4.0	6.5	22
Tetrachloroethene	1.2	20	8.2	140

Client Sample ID: BOP-79i-0816

Lab ID#: 1608175-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.1	13	7.7	89

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: BOP-84i-0816

Lab ID#: 1608175-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	5.2	5.8	28
Tetrachloroethene	1.1	8.0	7.3	54

Client Sample ID: BOP-85i-0816

Lab ID#: 1608175-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.1	28	7.3	190

Client Sample ID: BOP-86i-0816

Lab ID#: 1608175-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	7.1	5.9	38
Tetrachloroethene	1.1	10	7.5	70

Client Sample ID: BOP-87i-0816

Lab ID#: 1608175-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	1.5	6.7	8.0
Trichloroethene	1.2	63	6.6	340
Tetrachloroethene	1.2	26	8.3	180

Client Sample ID: BOP-88i-0816

Lab ID#: 1608175-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	2.4	6.2	13
Trichloroethene	1.1	11	6.1	59
Tetrachloroethene	1.1	18	7.7	120

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VOW-16-0816

Lab ID#: 1608175-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	1.2	6.1	6.6
Tetrachloroethene	1.1	18	7.7	120

Client Sample ID: VOW-17-0816

Lab ID#: 1608175-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	1.4	5.9	7.8
Tetrachloroethene	1.1	7.4	7.4	50

Client Sample ID: VOW-18-0816

Lab ID#: 1608175-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	1.9	6.5	10
Tetrachloroethene	1.2	17	8.2	120

Client Sample ID: VP-1-0816

Lab ID#: 1608175-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	5.7	8.2	39

Client Sample ID: VP-2-0816

Lab ID#: 1608175-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	12	6.4	64
Tetrachloroethene	1.2	5.1	8.1	35

Client Sample ID: VP-3-0816

Lab ID#: 1608175-16A

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-3-0816

Lab ID#: 1608175-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	3.2	6.4	18
Trichloroethene	1.2	1.4	6.3	7.5
Tetrachloroethene	1.2	7.2	8.0	49

Client Sample ID: VP-4-0816

Lab ID#: 1608175-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	3.0	5.8	16	31
Tetrachloroethene	3.0	6.7	20	45

Client Sample ID: VP-5-0816

Lab ID#: 1608175-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.3	5.7	6.9	31
Tetrachloroethene	1.3	4.5	8.7	30

Client Sample ID: VP-6-0816

Lab ID#: 1608175-19A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	5.4	6.0	29
Trichloroethene	1.1	1.9	5.9	10
Tetrachloroethene	1.1	10	7.5	68

Client Sample ID: VP-7-0816

Lab ID#: 1608175-20A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.1	6.3	4.3	25
1,1,1-Trichloroethane	1.1	150	5.9	820

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-7-0816

Lab ID#: 1608175-20A

cis-1,2-Dichloroethene	1.1	5.1	4.3	20
Trichloroethene	1.1	14	5.8	78
Tetrachloroethene	1.1	14	7.4	92

Client Sample ID: VP-8-0816

Lab ID#: 1608175-21A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	3.0	28	12	110
1,1,1-Trichloroethane	3.0	510	16	2800
cis-1,2-Dichloroethene	3.0	7.4	12	30
Trichloroethene	3.0	24	16	130
Tetrachloroethene	3.0	15	20	100

Client Sample ID: VP-9-0816

Lab ID#: 1608175-22A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	1.6	6.4	8.6
Trichloroethene	1.2	14	6.3	76
Tetrachloroethene	1.2	8.6	7.9	58

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Client Sample ID: SVE-Inf-0816

Lab ID#: 1608175-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081209**	**Date of Collection: 8/4/16 9:05:00 AM**	
Dil. Factor:	**2.32**	**Date of Analysis: 8/12/16 04:03 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	1.3	6.3	7.2
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	45	6.2	240
Tetrachloroethene	1.2	13	7.9	90

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SVE-Gacl-0816

Lab ID#: 1608175-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081210**	**Date of Collection: 8/4/16 9:15:00 AM**	
Dil. Factor:	**2.17**	**Date of Analysis: 8/12/16 04:30 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
1,1,1-Trichloroethane	1.1	2.1	5.9	11
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	38	5.8	200
Tetrachloroethene	1.1	14	7.4	94

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: SVE-Eff-0816

Lab ID#: 1608175-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081211**	**Date of Collection: 8/4/16 9:25:00 AM**	
Dil. Factor:	**2.20**	**Date of Analysis: 8/12/16 04:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.9	Not Detected
Tetrachloroethene	1.1	14	7.5	99

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BOP-78i-0816

Lab ID#: 1608175-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081212**	**Date of Collection:**	**8/5/16 11:10:00 AM**
Dil. Factor:	**2.43**	**Date of Analysis:**	**8/12/16 05:23 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	4.0	6.5	22
Tetrachloroethene	1.2	20	8.2	140

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BOP-79i-0816

Lab ID#: 1608175-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081213**	**Date of Collection:**	**8/5/16 11:40:00 AM**
Dil. Factor:	**2.27**	**Date of Analysis:**	**8/12/16 05:49 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.2	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	Not Detected	6.1	Not Detected
Tetrachloroethene	1.1	13	7.7	89

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	102	70-130

eurofins | Air Toxics

Client Sample ID: BOP-84i-0816

Lab ID#: 1608175-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081214**	**Date of Collection:**	**8/5/16 12:55:00 PM**
Dil. Factor:	**2.15**	**Date of Analysis:**	**8/12/16 06:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	5.2	5.8	28
Tetrachloroethene	1.1	8.0	7.3	54

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	101	70-130

eurofins | Air Toxics

Client Sample ID: BOP-85i-0816

Lab ID#: 1608175-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081215**	**Date of Collection:**	**8/5/16 10:25:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**8/12/16 06:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	Not Detected	5.8	Not Detected
Tetrachloroethene	1.1	28	7.3	190

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: BOP-86i-0816

Lab ID#: 1608175-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081216**	**Date of Collection:**	**8/5/16 10:05:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**8/12/16 07:08 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	7.1	5.9	38
Tetrachloroethene	1.1	10	7.5	70

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: BOP-87i-0816

Lab ID#: 1608175-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081217**	**Date of Collection:**	**8/5/16 10:40:00 AM**
Dil. Factor:	**2.46**	**Date of Analysis:**	**8/12/16 07:34 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.2	1.5	6.7	8.0
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	63	6.6	340
Tetrachloroethene	1.2	26	8.3	180

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: BOP-88i-0816

Lab ID#: 1608175-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081218**	**Date of Collection:**	**8/5/16 10:50:00 AM**
Dil. Factor:	**2.28**	**Date of Analysis:**	**8/12/16 11:03 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	2.4	6.2	13
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	11	6.1	59
Tetrachloroethene	1.1	18	7.7	120

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VOW-16-0816

Lab ID#: 1608175-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081219**	**Date of Collection: 8/5/16 11:50:00 AM**	
Dil. Factor:	**2.26**	**Date of Analysis: 8/12/16 11:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.2	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	1.2	6.1	6.6
Tetrachloroethene	1.1	18	7.7	120

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: VOW-17-0816

Lab ID#: 1608175-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081220**	**Date of Collection: 8/5/16 12:40:00 PM**	
Dil. Factor:	**2.19**	**Date of Analysis: 8/12/16 11:55 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	1.4	5.9	7.8
Tetrachloroethene	1.1	7.4	7.4	50

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VOW-18-0816

Lab ID#: 1608175-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081221**	**Date of Collection: 8/5/16 10:00:00 AM**	
Dil. Factor:	**2.41**	**Date of Analysis: 8/13/16 12:22 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	1.9	6.5	10
Tetrachloroethene	1.2	17	8.2	120

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VP-1-0816

Lab ID#: 1608175-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081222**	**Date of Collection: 8/5/16 12:35:00 PM**	
Dil. Factor:	**2.42**	**Date of Analysis: 8/13/16 12:48 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.5	Not Detected
Tetrachloroethene	1.2	5.7	8.2	39

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: VP-2-0816

Lab ID#: 1608175-15A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081223**	**Date of Collection: 8/5/16 12:25:00 PM**	
Dil. Factor:	**2.39**	**Date of Analysis: 8/13/16 01:14 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Trichloroethene	1.2	12	6.4	64
Tetrachloroethene	1.2	5.1	8.1	35

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: VP-3-0816

Lab ID#: 1608175-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081224**	**Date of Collection: 8/5/16 12:20:00 PM**	
Dil. Factor:	**2.35**	**Date of Analysis: 8/13/16 01:41 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	3.2	6.4	18
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	1.4	6.3	7.5
Tetrachloroethene	1.2	7.2	8.0	49

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: VP-4-0816

Lab ID#: 1608175-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a081629**	**Date of Collection: 8/5/16 8:40:00 AM**	
Dil. Factor:	**6.02**	**Date of Analysis: 8/17/16 08:17 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	3.0	Not Detected	7.7	Not Detected
1,1-Dichloroethene	3.0	Not Detected	12	Not Detected
1,1,1-Trichloroethane	3.0	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	3.0	Not Detected	12	Not Detected
Trichloroethene	3.0	5.8	16	31
Tetrachloroethene	3.0	6.7	20	45

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: VP-5-0816

Lab ID#: 1608175-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a081615**	**Date of Collection: 8/5/16 8:50:00 AM**	
Dil. Factor:	**2.57**	**Date of Analysis: 8/16/16 06:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Trichloroethene	1.3	5.7	6.9	31
Tetrachloroethene	1.3	4.5	8.7	30

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: VP-6-0816

Lab ID#: 1608175-19A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081226**	**Date of Collection: 8/5/16 9:45:00 AM**	
Dil. Factor:	**2.20**	**Date of Analysis: 8/13/16 02:30 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
1,1,1-Trichloroethane	1.1	5.4	6.0	29
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	1.9	5.9	10
Tetrachloroethene	1.1	10	7.5	68

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: VP-7-0816

Lab ID#: 1608175-20A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081227**	**Date of Collection: 8/5/16 9:10:00 AM**	
Dil. Factor:	**2.18**	**Date of Analysis: 8/13/16 02:57 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	6.3	4.3	25
1,1,1-Trichloroethane	1.1	150	5.9	820
cis-1,2-Dichloroethene	1.1	5.1	4.3	20
Trichloroethene	1.1	14	5.8	78
Tetrachloroethene	1.1	14	7.4	92

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: VP-8-0816

Lab ID#: 1608175-21A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081228**	**Date of Collection: 8/5/16 9:05:00 AM**	
Dil. Factor:	**5.92**	**Date of Analysis: 8/13/16 03:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	3.0	Not Detected	7.6	Not Detected
1,1-Dichloroethene	3.0	28	12	110
1,1,1-Trichloroethane	3.0	510	16	2800
cis-1,2-Dichloroethene	3.0	7.4	12	30
Trichloroethene	3.0	24	16	130
Tetrachloroethene	3.0	15	20	100

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: VP-9-0816

Lab ID#: 1608175-22A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a081616**	**Date of Collection: 8/5/16 8:30:00 AM**	
Dil. Factor:	**2.34**	**Date of Analysis: 8/16/16 06:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	1.6	6.4	8.6
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	14	6.3	76
Tetrachloroethene	1.2	8.6	7.9	58

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1608175-23A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081208**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/12/16 02:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1608175-23B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a081608**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/16/16 01:40 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 1608175-24A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/12/16 12:17 PM**	

Compound	%Recovery
Vinyl Chloride	86
1,1-Dichloroethene	88
1,1,1-Trichloroethane	94
cis-1,2-Dichloroethene	89
Trichloroethene	96
Tetrachloroethene	102

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 1608175-24B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a081603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/16/16 10:55 AM**	

Compound	%Recovery
Vinyl Chloride	98
1,1-Dichloroethene	105
1,1,1-Trichloroethane	102
cis-1,2-Dichloroethene	113
Trichloroethene	102
Tetrachloroethene	106

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1608175-25A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081205**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/12/16 12:52 PM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	100	70-130
1,1-Dichloroethene	99	70-130
1,1,1-Trichloroethane	106	70-130
cis-1,2-Dichloroethene	97	70-130
Trichloroethene	105	70-130
Tetrachloroethene	113	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1608175-25AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17081206**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/12/16 01:17 PM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	97	70-130
1,1-Dichloroethene	96	70-130
1,1,1-Trichloroethane	101	70-130
cis-1,2-Dichloroethene	95	70-130
Trichloroethene	102	70-130
Tetrachloroethene	107	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 1608175-25B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a081604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/16/16 11:34 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	102	70-130
1,1-Dichloroethene	104	70-130
1,1,1-Trichloroethane	103	70-130
cis-1,2-Dichloroethene	110	70-130
Trichloroethene	105	70-130
Tetrachloroethene	110	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 1608175-25BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a081605**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/16/16 11:59 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	102	70-130
1,1-Dichloroethene	106	70-130
1,1,1-Trichloroethane	103	70-130
cis-1,2-Dichloroethene	111	70-130
Trichloroethene	102	70-130
Tetrachloroethene	106	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	101	70-130

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Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmel

Collected by: (Print and Sign) Erin Waibel E Waibel

Company Landau Associates Email CKimmel@landauinc.com

Address 333 SW 5th Ave #700 City Portland State OR Zip 97204

Phone 5035421080 Fax 5035421081

Project Info:

P.O. # 025116.116.412

Project # 025116.116.412

Project Name Boeing of Portland

Turn Around Time:

☒ Normal

☐ Rush

specify

Lab Use Only

Pressurized by:

Date:

Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	SVE-Inf-0816	36494	8/4/16	0905	To-15 (6 list)	29	5		
02A	SVE-Gac1-0816	37310	8/4/16	0915		30	5		
03A	SVE-Eff-0816	33722	8/4/16	0925		30	5		
04A	BOP-7Bi-0816	37776	8/5/16	1110		29	5		
05A	BOP-79i-0816	3058		1140		27	5		
06A	BOP-84i-0816	36530		1255		30	5		
07A	BOP-85i-0816	35659		1025		29	5		
08A	BOP-86i-0816	33715		1005		30	5		
09A	BOP-87i-0816	1L1614		1040		26	4		
10A	BOP-88i-0816	14824		1050		27	4		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Waibel	8/8/16 1500	Mem V EATL	8/9/16 14:05

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		N/A	Good	Yes No (None)	1608175

Form 1293 rev.11

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Sample Transportation Notice
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(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmel
Collected by: (Print and Sign) Erin Waibel
Company Landau Associates Email CKimmel@landauinc.com
Address 333 SW 5th Ave #700 City Portland State OR Zip 97204
Phone 5035421080 Fax 5035421081

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☑ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
11A	VOW-16-0816	36500	8/5/16 ~~1150~~ CRW	1150	TO-15(6 list)	30	5		
12A	VOW-17-0816	37721	8/5/16	1240		30	5		
13A	VOW-18-0816	33719		1000		30	5		
14A	VP-1-0816	34085		1235		29	5		
15A	VP-2-0816	IL2797		1225		27	5		
16A	VP-3-0816	34082		1220		28	5		
17A	VP-4-0816	IL1603		0840		28	5		
18A	VP-5-0816	IL1577		0850		27	4		
19A	VP-6-0816	35617		0945		30	5		
20A	VP-7-0816	34088		0910		29	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Waibel	8/5/16 1500	[illegible] EATL	8/9/16 14:05

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		N/A	good	Yes No (None)	1608175

Form 1293 rev.11

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Sample Transportation Notice
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(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmel
Collected by: (Print and Sign) Erin Waibel E Waibel
Company Landau Associates Email ckimmel@landauinc.com
Address 333 SW 5th Ave #700 City Portland State OR Zip 97204
Phone 503 5421080 Fax 5035421081

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
21A	VP-8-0816	35614	8/5/16	0905	TO-15 (6 List)	28	4		
22A	VP-9-0816	1L1812	↓	0830	↓	28	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Waibel	8/5/16 1500	Mon V/ FATL	8/9/16 14:05
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		N/A	Good	Yes No (None)	1608175

Form 1293 rev.11

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: August 21, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 08/04/2016
Group Number: 1690665
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
TowerInf-0816 Water	8507791
TowerInf-0816 Total Metals Water	8507792
TowerInf-0816 Dissolved Metals Water	8507793
TowerInD-0816 Water	8507794
TowerEff-0816 Water	8507795
TowerEff-0816 Total Metals Water	8507796
TowerEff-0816 Dissolved Metals Water	8507797
TowerEfD-0816 Water	8507798
LS-2-0816 Water	8507799
Trip Blank Water	8507800

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1690665

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8507791, 8507794, 8507795, 8507798, 8507799, 8507800
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

EPA 300.0, Wet Chemistry

Batch #: 16217667151B (Sample number(s): 8507795 UNSPK: P506796 BKG: P506796)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Nitrate Nitrogen

SM 5310 C-2000, Wet Chemistry

Batch #: 16232987401A (Sample number(s): 8507791, 8507795 UNSPK: P509264 BKG: P509264)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Sample Description: TowerInf-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507791
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 10:45 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWIN

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.7**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**12**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00228	**Sulfate**	14808-79-8	**8.9**		1.0	1

Sample Description: TowerInf-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507791
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 10:45 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWIN

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**SM 5310 C-2000**		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/10/2016 23:49	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/10/2016 23:49	Matthew S Krause	1
00228	Sulfate	EPA 300.0	1	16217667901B	08/05/2016 01:38	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16232987401A	08/19/2016 20:32	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16218133301A	08/05/2016 09:47	Tyler W Wise	1

Sample Description: TowerInf-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507792
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 10:45 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162180635001	08/06/2016 06:25	Matthew R Machtinger	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162180635001	08/05/2016 17:50	Barbara A Kane	1

Sample Description: TowerInf-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507793
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 10:45 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162180635001	08/06/2016 06:28	Matthew R Machtinger	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162180635001	08/05/2016 17:50	Barbara A Kane	1

Sample Description: TowerInD-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507794
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 10:50 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWID

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.7**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.7**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**13**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: TowerInD-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507794
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 10:50 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWID

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 00:09	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 00:09	Matthew S Krause	1

Sample Description: TowerEff-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507795
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 11:05 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.3**		0.10	1
01506	Nitrite Nitrogen	14797-65-0	0.10	U	0.10	1

Sample Description: TowerEff-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507795
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 11:05 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		mg/l		mg/l	
00228	**Sulfate**	14808-79-8	**9.7**		1.0	1
	EPA 365.1		mg/l		mg/l	
00345	Total Phosphorus as PO4 water	14265-44-2	0.31	U	0.31	1
	SM 5310 C-2000		mg/l		mg/l	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		mg/l		mg/l	
01333	Sulfide	18496-25-8	2.0	U	2.0	1
	SM 4500-NH3 D-1997		mg/l		mg/l	
12677	Ammonia-Nitrogen	7664-41-7	0.20	U	0.20	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 00:30	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 00:30	Matthew S Krause	1
00368	Nitrate Nitrogen	EPA 300.0	1	16217667151B	08/04/2016 19:27	Drew M Gerhart	1
01506	Nitrite Nitrogen	EPA 300.0	1	16217667151B	08/04/2016 19:27	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16217667151B	08/04/2016 19:27	Drew M Gerhart	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	16222110101B	08/10/2016 04:54	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16232987401A	08/19/2016 20:45	Clinton M Wilson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	16222110101B	08/09/2016 03:30	Sandra J Miller	1
01333	Sulfide	EPA 376.1	1	16218133301A	08/05/2016 09:47	Tyler W Wise	1
12677	Ammonia-Nitrogen	SM 4500-NH3 D-1997	1	16223004201A	08/10/2016 21:00	Michelle L Lalli	1

Sample Description: TowerEff-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507796
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 11:05 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162180635001	08/06/2016 06:32	Matthew R Machtinger	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162180635001	08/05/2016 17:50	Barbara A Kane	1

Sample Description: TowerEff-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507797
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 11:05 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162180635001	08/06/2016 04:58	Matthew R Machtinger	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162180635001	08/05/2016 17:50	Barbara A Kane	1

Sample Description: TowerEfD-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507798
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 11:10 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWED

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: TowerEfD-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507798
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 11:10 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTWED

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 00:50	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 00:50	Matthew S Krause	1

Sample Description: LS-2-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507799
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 12:15 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PLS2-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: LS-2-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507799
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 12:15 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PLS2-

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 01:10	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 01:10	Matthew S Krause	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507800
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 07/15/2016

The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTB--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8507800
LL Group # 1690665
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 07/15/2016

The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/21/2016 14:01

PTB--

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/10/2016 22:48	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/10/2016 22:48	Matthew S Krause	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/21/2016 14:01

Group Number: 1690665

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: H162232AA	Sample number(s): 8507791,8507794-8507795,8507798-8507800		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
	mg/l		mg/l
Batch number: 162180635001	Sample number(s): 8507792-8507793,8507796-8507797		
Iron	0.400	U	0.400

*- 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: 08/21/2016 14:01

Group Number: 1690665

Method Blank (continued)

Analysis Name	Result mg/l		LOQ mg/l
Batch number: 16217667151B	Sample number(s): 8507795		
Nitrate Nitrogen	0.10	U	0.10
Nitrite Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16217667901B	Sample number(s): 8507791		
Sulfate	1.0	U	1.0
Batch number: 16222110101B	Sample number(s): 8507795		
Total Phosphorus as PO4 water	0.31	U	0.31
Batch number: 16232987401A	Sample number(s): 8507791,8507795		
Total Organic Carbon	1.0	U	1.0
Batch number: 16218133301A	Sample number(s): 8507791,8507795		
Sulfide	2.0	U	2.0
Batch number: 16223004201A	Sample number(s): 8507795		
Ammonia-Nitrogen	0.20	U	0.20

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: H162232AA	Sample number(s): 8507791,8507794-8507795,8507798-8507800								
Acetone	37.5	36.9	37.5	33.48	98	89	65-124	10	30
Benzene	5.00	5.26	5.00	5.14	105	103	80-120	2	30
Bromodichloromethane	5.00	5.20	5.00	5.15	104	103	80-120	1	30
Bromoform	5.00	4.84	5.00	4.95	97	99	62-128	2	30
Bromomethane	5.00	4.96	5.00	4.96	99	99	71-126	0	30
2-Butanone	37.5	37.78	37.5	38.59	101	103	66-135	2	30
Carbon Disulfide	5.00	5.00	5.00	4.76	100	95	65-120	5	30
Carbon Tetrachloride	5.00	5.37	5.00	5.28	107	106	65-134	2	30
Chlorobenzene	5.00	5.02	5.00	5.16	100	103	80-120	3	30
Chloroethane	5.00	5.01	5.00	4.85	100	97	71-122	3	30
Chloroform	5.00	5.14	5.00	5.06	103	101	80-120	1	30
Chloromethane	5.00	5.29	5.00	5.08	106	102	63-121	4	30
Dibromochloromethane	5.00	4.93	5.00	5.03	99	101	68-131	2	30
1,1-Dichloroethane	5.00	5.53	5.00	5.40	111	108	75-120	2	30
1,2-Dichloroethane	5.00	5.23	5.00	5.19	105	104	72-127	1	30
1,1-Dichloroethene	5.00	5.50	5.00	5.40	110	108	70-120	2	30
cis-1,2-Dichloroethene	5.00	5.24	5.00	5.16	105	103	80-120	1	30
trans-1,2-Dichloroethene	5.00	5.43	5.00	5.41	109	108	80-120	0	30
1,2-Dichloropropane	5.00	5.38	5.00	5.32	108	106	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.12	5.00	4.97	102	99	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.97	5.00	5.14	99	103	77-121	3	30
Ethylbenzene	5.00	4.99	5.00	5.15	100	103	80-120	3	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: 08/21/2016 14:01

Group Number: 1690665

LCS/LCSD (continued)

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					
2-Hexanone	25	24.52	25	25.69	98	103	73-128	5	30
4-Methyl-2-pentanone	25	25.35	25	26.91	101	108	71-129	6	30
Methylene Chloride	5.00	5.18	5.00	5.15	104	103	80-120	1	30
Styrene	5.00	5.00	5.00	5.22	100	104	80-122	4	30
1,1,2,2-Tetrachloroethane	5.00	4.78	5.00	5.09	96	102	80-120	6	30
Tetrachloroethene	5.00	5.00	5.00	5.11	100	102	80-120	2	30
Toluene	5.00	5.07	5.00	5.21	101	104	80-120	3	30
112Trichloro122Trifluoroethane	5.00	5.33	5.00	5.32	107	106	75-120	0	30
1,1,1-Trichloroethane	5.00	5.21	5.00	5.17	104	103	70-124	1	30
1,1,2-Trichloroethane	5.00	5.03	5.00	5.20	101	104	80-120	3	30
Trichloroethene	5.00	5.28	5.00	5.28	106	106	80-120	0	30
Trichlorofluoromethane	5.00	5.56	5.00	5.31	111	106	64-133	5	30
Vinyl Acetate	12.5	12.68	12.5	12.63	101	101	40-185	0	30
Vinyl Chloride	5.00	5.18	5.00	5.11	104	102	62-128	1	30
m+p-Xylene	10	10.12	10	10.36	101	104	80-120	2	30
o-Xylene	5.00	4.97	5.00	5.13	99	103	80-120	3	30
	mg/l	mg/l	mg/l	mg/l					
Batch number: 162180635001	Sample number(s): 8507792-8507793,8507796-8507797								
Iron	1.00	0.920			92		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16217667151B	Sample number(s): 8507795								
Nitrate Nitrogen	0.750	0.752	0.750	0.754	100	101	90-110	0	20
Nitrite Nitrogen	0.750	0.754	0.750	0.755	101	101	90-110	0	20
Sulfate	7.50	7.46	7.50	7.50	99	100	90-110	1	20
Batch number: 16217667901B	Sample number(s): 8507791								
Sulfate	7.50	7.62	7.50	7.61	102	101	90-110	0	20
Batch number: 16222110101B	Sample number(s): 8507795								
Total Phosphorus as PO4 water	3.53	3.52			100		90-110		
Batch number: 16232987401A	Sample number(s): 8507791,8507795								
Total Organic Carbon	25	25.87			103		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16218133301A	Sample number(s): 8507791,8507795								
Sulfide	20	19.96	20	19.76	100	99	80-120	1	4
Batch number: 16223004201A	Sample number(s): 8507795								
Ammonia-Nitrogen	5.00	4.92			98		78-128		

*- 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: 08/21/2016 14:01

Group Number: 1690665

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 162180635001	Sample number(s): 8507792-8507793,8507796-8507797 UNSPK: 8507797									
Iron	0.400 U	1.00	0.952	1.00	0.902	95	90	75-125	5	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16217667151B	Sample number(s): 8507795 UNSPK: P506796									
Nitrate Nitrogen	2.42	5.00	8.04			113*		90-110		
Nitrite Nitrogen	0.50 U	5.00	4.55			91		90-110		
Sulfate	2.24	50	51.8			99		90-110		
Batch number: 16217667901B	Sample number(s): 8507791 UNSPK: P506811									
Sulfate	30.16	50	79.39			98		90-110		
Batch number: 16222110101B	Sample number(s): 8507795 UNSPK: P504539									
Total Phosphorus as PO4 water	0.31 U	6.14	6.18			101		90-110		
Batch number: 16232987401A	Sample number(s): 8507791,8507795 UNSPK: P509264									
Total Organic Carbon	0.937	10	11.83			109		91-113		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16223004201A	Sample number(s): 8507795 UNSPK: 8507795									
Ammonia-Nitrogen	0.20 U	5.00	4.92	5.00	4.92	98	98	78-128	0	15

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 162180635001	Sample number(s): 8507792-8507793,8507796-8507797 BKG: 8507797			
Iron	0.400 U	0.400 U	0 (1)	20
	mg/l	mg/l		
Batch number: 16217667151B	Sample number(s): 8507795 BKG: P506796			
Nitrate Nitrogen	2.42	2.40	1 (1)	15
Nitrite Nitrogen	0.50 U	0.50 U	0 (1)	15
Sulfate	2.24	2.25	0 (1)	15
Batch number: 16217667901B	Sample number(s): 8507791 BKG: P506811			
Sulfate	30.16	30.05	0	15
Batch number: 16222110101B	Sample number(s): 8507795 BKG: P504539			
Total Phosphorus as PO4 water	0.31 U	0.31 U	0 (1)	4
Batch number: 16232987401A	Sample number(s): 8507791,8507795 BKG: P509264			

*- 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: 08/21/2016 14:01

Group Number: 1690665

Laboratory Duplicate (continued)

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Total Organic Carbon	0.937	0.898	4* (1)	3
	mg/l	mg/l		
Batch number: 16218133301A	Sample number(s): 8507791,8507795 BKG: 8507795			
Sulfide	2.0 U	2.0 U	0 (1)	20
Batch number: 16223004201A	Sample number(s): 8507795 BKG: 8507795			
Ammonia-Nitrogen	0.20 U	0.20 U	0 (1)	20

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 Boeing 38
Batch number: H162232AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8507791	104	104	97	99
8507794	98	101	102	100
8507795	99	101	101	101
8507798	102	99	99	97
8507799	99	102	102	100
8507800	99	103	101	101
Blank	100	98	100	98
LCS	104	104	98	100
LCSD	100	100	101	101
Limits:	77-114	74-113	77-110	78-110

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(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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1690665 Sample # 8507791-800

Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

4 Analyses Requested

5 Remarks/Comments

Include John Rusoff in Distribution List.

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	VOC (38 list)	Toc	Sulfate	Sulfide	Total Iron	Dissolved Iron	Total Phosphorous	Nitrate	Nitrite	Ammonia		
TowerInF-0816	8/3/16	1045	H_2O	10	X	X	X	X	X	X						
TowerInD-0816	8/3/16	1050	H_2O	3	X											
TowerEff-0816	8/3/16	1105	H_2O	12	X	X	X	X	X	X	X	X	X	X		
TowerEffD-0816	8/3/16	1110	H_2O	3	X											
LS-2-0816	8/3/16	1215	H_2O	3	X											
Trip Blanks	7/15/16	—	H_2O	2	X											

6 Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	8/3/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 8/4/16 0925

Relinquished by commercial carrier (circle): (UPS) FedEx Other: _____

Temperature upon Receipt: 1.3 °C

Custody Seals Intact?: (Yes) No

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Sample Administration Receipt Documentation Log

Doc Log ID: 156660

Group Number(s): 1690665

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/04/2016 9:25
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 Krista Abel (3058) at 09:48 on 08/04/2016

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	DT146	1.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: August 14, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 08/04/2016
Group Number: 1690791
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
D-07i-0816 Water	8508214
D-08i-0816 Water	8508215
D-11i-0816 Water	8508216
D-12i-0816 Water	8508217
BOP-57ia-0816 Water	8508218
BOP-57ib-0816 Water	8508219
Trip Blank Water	8508220

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1690791

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8508214, 8508216, 8508217, 8508218, 8508219, 8508220
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample #s: 8508215
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: D-07i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508214
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 07:55 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-07I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**47**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.6**		0.2	1
11996	**Toluene**	108-88-3	**3.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: D-07i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508214
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 07:55 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-07I

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 01:31	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 01:31	Matthew S Krause	1

Sample Description: D-08i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508215
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 08:00 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-08I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**44**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**3.0**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.8**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**1.3**		0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**0.6**		0.5	1
11996	**1,1,1-Trichloroethane**	71-55-6	**0.7**		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**38**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**59**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10

Sample Description: D-08i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508215
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 08:00 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-08I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**2.5**		2.0	10
11996	cis-1,2-Dichloroethene	156-59-2	2.0	U	2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**32**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 01:51	Matthew S Krause	1

Sample Description: D-08i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508215
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 08:00 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-08I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162232AA	08/11/2016 02:11	Matthew S Krause	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 01:51	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162232AA	08/11/2016 02:11	Matthew S Krause	10

Sample Description: D-11i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508216
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 08:15 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-11I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**49**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: D-11i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508216
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 08:15 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-11I

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 02:32	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 02:32	Matthew S Krause	1

Sample Description: D-12i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508217
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 08:25 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-12I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**56**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.7**		0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.3**		0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: D-12i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508217
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/02/2016 08:25 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

D-12I

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 02:52	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 02:52	Matthew S Krause	1

Sample Description: BOP-57ia-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508218
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 12:50 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

B57IA

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**88**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.4**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**1.7**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**11**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: BOP-57ia-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508218
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 12:50 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

B57IA

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 03:12	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 03:12	Matthew S Krause	1

Sample Description: BOP-57ib-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508219
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 12:40 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

B57IB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**42**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.4**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.1**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**31**	**E**	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**8.8**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.9**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	**1,1,1-Trichloroethane**	71-55-6	**7.4**		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**48**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**59**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-57ib-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508219
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 12:40 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

B57IB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**27**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**8.0**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	**1,1,1-Trichloroethane**	71-55-6	**6.4**		5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**43**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 03:32	Matthew S Krause	1

Sample Description: BOP-57ib-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508219
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/03/2016 12:40 by EMW The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

B57IB

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162232AA	08/11/2016 03:53	Matthew S Krause	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 03:32	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162232AA	08/11/2016 03:53	Matthew S Krause	10

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508220
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 07/15/2016

The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

BOPTB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8508220
LL Group # 1690791
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 07/15/2016

The Boeing Company

Submitted: 08/04/2016 09:25
Reported: 08/14/2016 13:54

BOPTB

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/10/2016 23:09	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/10/2016 23:09	Matthew S Krause	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/14/2016 13:54

Group Number: 1690791

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: H162232AA	Sample number(s): 8508214-8508220		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

*- 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: 08/14/2016 13:54

Group Number: 1690791

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: H162232AA	Sample number(s): 8508214-8508220								
Acetone	37.5	36.9	37.5	33.48	98	89	65-124	10	30
Benzene	5.00	5.26	5.00	5.14	105	103	80-120	2	30
Bromodichloromethane	5.00	5.20	5.00	5.15	104	103	80-120	1	30
Bromoform	5.00	4.84	5.00	4.95	97	99	62-128	2	30
Bromomethane	5.00	4.96	5.00	4.96	99	99	71-126	0	30
2-Butanone	37.5	37.78	37.5	38.59	101	103	66-135	2	30
Carbon Disulfide	5.00	5.00	5.00	4.76	100	95	65-120	5	30
Carbon Tetrachloride	5.00	5.37	5.00	5.28	107	106	65-134	2	30
Chlorobenzene	5.00	5.02	5.00	5.16	100	103	80-120	3	30
Chloroethane	5.00	5.01	5.00	4.85	100	97	71-122	3	30
Chloroform	5.00	5.14	5.00	5.06	103	101	80-120	1	30
Chloromethane	5.00	5.29	5.00	5.08	106	102	63-121	4	30
Dibromochloromethane	5.00	4.93	5.00	5.03	99	101	68-131	2	30
1,1-Dichloroethane	5.00	5.53	5.00	5.40	111	108	75-120	2	30
1,2-Dichloroethane	5.00	5.23	5.00	5.19	105	104	72-127	1	30
1,1-Dichloroethene	5.00	5.50	5.00	5.40	110	108	70-120	2	30
cis-1,2-Dichloroethene	5.00	5.24	5.00	5.16	105	103	80-120	1	30
trans-1,2-Dichloroethene	5.00	5.43	5.00	5.41	109	108	80-120	0	30
1,2-Dichloropropane	5.00	5.38	5.00	5.32	108	106	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.12	5.00	4.97	102	99	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.97	5.00	5.14	99	103	77-121	3	30
Ethylbenzene	5.00	4.99	5.00	5.15	100	103	80-120	3	30
2-Hexanone	25	24.52	25	25.69	98	103	73-128	5	30
4-Methyl-2-pentanone	25	25.35	25	26.91	101	108	71-129	6	30
Methylene Chloride	5.00	5.18	5.00	5.15	104	103	80-120	1	30
Styrene	5.00	5.00	5.00	5.22	100	104	80-122	4	30
1,1,2,2-Tetrachloroethane	5.00	4.78	5.00	5.09	96	102	80-120	6	30
Tetrachloroethene	5.00	5.00	5.00	5.11	100	102	80-120	2	30
Toluene	5.00	5.07	5.00	5.21	101	104	80-120	3	30
112Trichloro122Trifluoroethane	5.00	5.33	5.00	5.32	107	106	75-120	0	30
1,1,1-Trichloroethane	5.00	5.21	5.00	5.17	104	103	70-124	1	30
1,1,2-Trichloroethane	5.00	5.03	5.00	5.20	101	104	80-120	3	30
Trichloroethene	5.00	5.28	5.00	5.28	106	106	80-120	0	30
Trichlorofluoromethane	5.00	5.56	5.00	5.31	111	106	64-133	5	30
Vinyl Acetate	12.5	12.68	12.5	12.63	101	101	40-185	0	30
Vinyl Chloride	5.00	5.18	5.00	5.11	104	102	62-128	1	30
m+p-Xylene	10	10.12	10	10.36	101	104	80-120	2	30
o-Xylene	5.00	4.97	5.00	5.13	99	103	80-120	3	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
Group Number: 1690791
Reported: 08/14/2016 13:54

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 Boeing 38
Batch number: H162232AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8508214	99	100	101	99
8508215	99	104	101	101
8508215DL	100	99	100	100
8508216	99	99	101	100
8508217	99	102	102	100
8508218	104	101	96	100
8508219	99	100	101	100
8508219DL	104	105	97	101
8508220	101	104	100	100
Blank	100	98	100	98
LCS	104	104	98	100
LCSD	100	100	101	101
Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13119 For Eurofins Lancaster Laboratories use only Group # 1640791 Sample # 8508214-20

Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025146.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): ____
Sampler: EMW # of Coolers: 1

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	4 Analyses Requested: VOC (38 List)	5 Remarks/Comments
D-07i-0816	8/2/16	0755	H_2O	3	X	
D-08i-0816	8/2/16	0800	H_2O	3	X	
D-11i-0816	8/2/16	0815	H_2O	3	X	
D-12i-0816	8/2/16	0825	H_2O	3	X	
BOP-57ia-0816	8/3/16	1250	H_2O	3	X	
BOP-57ib-0816	8/3/16	1240	H_2O	3	X	
Trip Blanks	7/15/16	—	H_2O	2	X	

Page 23 of 25

6 Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour

Date needed: ____

Relinquished by:	Date/Time	Received by:	Date/Time 7
[signature]	8/3/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature] Abel	Date/Time 8/4/16 0925

Relinquished by commercial carrier (circle): (UPS) FedEx Other: ____

Temperature upon Receipt: 1.3 °C

Custody Seals Intact?: (Yes) No

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 156660

Group Number(s): 1690791

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/04/2016 9:25
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 Krista Abel (3058) at 09:48 on 08/04/2016

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	DT146	1.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company
PO Box 3707
Seattle WA 98124

Report Date: August 25, 2016

Project: Boeing of Portland 025116.116.412

Submittal Date: 08/05/2016
Group Number: 1691407
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
LAI-1-0816 Water	8510419
LAI-2-0816 Water	8510420
LAI-3-0816 Water	8510421
LAI-4-0816 Water	8510422
LAI-5-0816 Water	8510423
LAI-6-0816 Water	8510424
LAI-7-0816 Water	8510425
Trip Blank Water	8510426

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Boeing of Portland 025116.116.412
LL Group #: 1691407

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8510422, 8510425, 8510426

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

ECY 97-602 NWTPH-Dx modified, GC Petroleum Hydrocarbons w/Si

Sample #s: 8510419, 8510420, 8510421, 8510423, 8510424, 8510425

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

Sample #s: 8510422

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.
The sample pattern does not match our reference standard for #2fuel/diesel.
The sample pattern is most similar to our reference standard for Motor oil composite.

Batch #: 162280018A (Sample number(s): 8510419-8510425)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: DRO C12-C24 w/Si Gel

The relative percent difference(s) for the following analyte(s) in the LCS/LCSD were outside acceptance windows: DRO C12-C24 w/Si Gel

Sample Description: LAI-1-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510419
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/03/2016 14:15 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.095	U	0.095	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.095	U	0.095	1
12094	Motor Oil w/Si Gel	n.a.	0.24	U	0.24	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	162280018A	08/17/2016 22:52	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	162280018A	08/16/2016 06:00	Kerrie A Freeburn	1

Sample Description: LAI-2-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510420
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/03/2016 15:15 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.10	U	0.10	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.10	U	0.10	1
12094	Motor Oil w/Si Gel	n.a.	0.25	U	0.25	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	162280018A	08/17/2016 23:41	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	162280018A	08/16/2016 06:00	Kerrie A Freeburn	1

Sample Description: LAI-3-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510421
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/03/2016 15:40 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.095	U	0.095	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.095	U	0.095	1
12094	Motor Oil w/Si Gel	n.a.	0.24	U	0.24	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	162280018A	08/18/2016 00:30	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	162280018A	08/16/2016 06:00	Kerrie A Freeburn	1

Sample Description: LAI-4-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510422
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/04/2016 11:00 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.8**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**	**mg/l**		**mg/l**

Sample Description: LAI-4-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510422
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/04/2016 11:00 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	**Diesel/#2 Fuel w/Si Gel**	68334-30-5	**1.2**		0.097	1
12094	**DRO C12-C24 w/Si Gel**	n.a.	**1.0**		0.097	1
12094	**Motor Oil w/Si Gel**	n.a.	**2.6**		0.24	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

The sample pattern does not match our reference standard for #2fuel/diesel.

The sample pattern is most similar to our reference standard for Motor oil composite.

Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**9.1**		1.0	1
	EPA 1664A		**mg/l**		**mg/l**	
08079	HEM (oil & grease)	n.a.	5.0	U	5.0	1
08078	SGT-HEM (TPH)	n.a.	5.0	U	5.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 04:13	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 04:13	Matthew S Krause	1
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	162280018A	08/18/2016 03:45	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	162280018A	08/16/2016 06:00	Kerrie A Freeburn	1
00368	Nitrate Nitrogen	EPA 300.0	1	16218972131A	08/05/2016 19:19	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16218972131A	08/05/2016 19:19	Alexandria M Lanager	1
08079	HEM (oil & grease)	EPA 1664A	1	16229807901A	08/16/2016 09:33	Yolunder Y Bunch	1
08078	SGT-HEM (TPH)	EPA 1664A	1	16229807801A	08/16/2016 09:34	Yolunder Y Bunch	1

Sample Description: LAI-5-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510423
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/04/2016 12:05 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-5

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.097	U	0.097	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.097	U	0.097	1
12094	Motor Oil w/Si Gel	n.a.	0.24	U	0.24	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	162280018A	08/18/2016 01:19	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	162280018A	08/16/2016 06:00	Kerrie A Freeburn	1

Sample Description: LAI-6-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510424
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/04/2016 12:40 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-6

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.095	U	0.095	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.095	U	0.095	1
12094	Motor Oil w/Si Gel	n.a.	0.24	U	0.24	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	162280018A	08/18/2016 02:07	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	162280018A	08/16/2016 06:00	Kerrie A Freeburn	1

Sample Description: LAI-7-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510425
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/04/2016 09:55 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-7

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.7**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**4.8**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**	**mg/l**		**mg/l**

Sample Description: LAI-7-0816 Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510425
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 08/04/2016 09:55 by EMW

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAI-7

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**mg/l**		**mg/l**	
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.096	U	0.096	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.096	U	0.096	1
12094	Motor Oil w/Si Gel	n.a.	0.24	U	0.24	1
	The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.					
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**3.9**		0.50	5
00228	**Sulfate**	14808-79-8	**15.0**		5.0	5
	EPA 1664A		**mg/l**		**mg/l**	
08079	HEM (oil & grease)	n.a.	5.0	U	5.0	1
08078	SGT-HEM (TPH)	n.a.	5.0	U	5.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 04:33	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 04:33	Matthew S Krause	1
12094	NWTPH-Dx Water w/ Silica Gel	ECY 97-602 NWTPH-Dx modified	1	162280018A	08/18/2016 02:56	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	162280018A	08/16/2016 06:00	Kerrie A Freeburn	1
00368	Nitrate Nitrogen	EPA 300.0	1	16218972131A	08/06/2016 09:53	Drew M Gerhart	5
00228	Sulfate	EPA 300.0	1	16218972131A	08/06/2016 09:53	Drew M Gerhart	5
08079	HEM (oil & grease)	EPA 1664A	1	16229807901A	08/16/2016 09:33	Yolunder Y Bunch	1
08078	SGT-HEM (TPH)	EPA 1664A	1	16229807801A	08/16/2016 09:34	Yolunder Y Bunch	1

Sample Description: Trip Blank Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510426
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 07/15/2016

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAITB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: Trip Blank Water
Boeing of Portland 0025116.116.412

LL Sample # WW 8510426
LL Group # 1691407
Account # 13419

Project Name: Boeing of Portland 025116.116.412

Collected: 07/15/2016

Submitted: 08/05/2016 10:00
Reported: 08/25/2016 07:39

The Boeing Company
PO Box 3707
Seattle WA 98124

LAITB

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/10/2016 23:29	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/10/2016 23:29	Matthew S Krause	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 07:39

Group Number: 1691407

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: H162232AA	Sample number(s): 8510422,8510425-8510426		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
	mg/l		mg/l
Batch number: 162280018A	Sample number(s): 8510419-8510425		
Diesel/#2 Fuel w/Si Gel	0.10	U	0.10

*- 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: 08/25/2016 07:39

Group Number: 1691407

Method Blank (continued)

Analysis Name	Result		LOQ
	mg/l		mg/l
DRO C12-C24 w/Si Gel	0.10	U	0.10
Motor Oil w/Si Gel	0.25	U	0.25
Batch number: 16218972131A	Sample number(s): 8510422,8510425		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16229807801A	Sample number(s): 8510422,8510425		
SGT-HEM (TPH)	5.0	U	5.0
Batch number: 16229807901A	Sample number(s): 8510422,8510425		
HEM (oil & grease)	5.0	U	5.0

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: H162232AA	Sample number(s): 8510422,8510425-8510426								
Acetone	37.5	36.9	37.5	33.48	98	89	65-124	10	30
Benzene	5.00	5.26	5.00	5.14	105	103	80-120	2	30
Bromodichloromethane	5.00	5.20	5.00	5.15	104	103	80-120	1	30
Bromoform	5.00	4.84	5.00	4.95	97	99	62-128	2	30
Bromomethane	5.00	4.96	5.00	4.96	99	99	71-126	0	30
2-Butanone	37.5	37.78	37.5	38.59	101	103	66-135	2	30
Carbon Disulfide	5.00	5.00	5.00	4.76	100	95	65-120	5	30
Carbon Tetrachloride	5.00	5.37	5.00	5.28	107	106	65-134	2	30
Chlorobenzene	5.00	5.02	5.00	5.16	100	103	80-120	3	30
Chloroethane	5.00	5.01	5.00	4.85	100	97	71-122	3	30
Chloroform	5.00	5.14	5.00	5.06	103	101	80-120	1	30
Chloromethane	5.00	5.29	5.00	5.08	106	102	63-121	4	30
Dibromochloromethane	5.00	4.93	5.00	5.03	99	101	68-131	2	30
1,1-Dichloroethane	5.00	5.53	5.00	5.40	111	108	75-120	2	30
1,2-Dichloroethane	5.00	5.23	5.00	5.19	105	104	72-127	1	30
1,1-Dichloroethene	5.00	5.50	5.00	5.40	110	108	70-120	2	30
cis-1,2-Dichloroethene	5.00	5.24	5.00	5.16	105	103	80-120	1	30
trans-1,2-Dichloroethene	5.00	5.43	5.00	5.41	109	108	80-120	0	30
1,2-Dichloropropane	5.00	5.38	5.00	5.32	108	106	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.12	5.00	4.97	102	99	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.97	5.00	5.14	99	103	77-121	3	30
Ethylbenzene	5.00	4.99	5.00	5.15	100	103	80-120	3	30
2-Hexanone	25	24.52	25	25.69	98	103	73-128	5	30
4-Methyl-2-pentanone	25	25.35	25	26.91	101	108	71-129	6	30
Methylene Chloride	5.00	5.18	5.00	5.15	104	103	80-120	1	30
Styrene	5.00	5.00	5.00	5.22	100	104	80-122	4	30
1,1,2,2-Tetrachloroethane	5.00	4.78	5.00	5.09	96	102	80-120	6	30
Tetrachloroethene	5.00	5.00	5.00	5.11	100	102	80-120	2	30
Toluene	5.00	5.07	5.00	5.21	101	104	80-120	3	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: 08/25/2016 07:39

Group Number: 1691407

LCS/LCSD (continued)

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					
112Trichloro122Trifluoroethane	5.00	5.33	5.00	5.32	107	106	75-120	0	30
1,1,1-Trichloroethane	5.00	5.21	5.00	5.17	104	103	70-124	1	30
1,1,2-Trichloroethane	5.00	5.03	5.00	5.20	101	104	80-120	3	30
Trichloroethene	5.00	5.28	5.00	5.28	106	106	80-120	0	30
Trichlorofluoromethane	5.00	5.56	5.00	5.31	111	106	64-133	5	30
Vinyl Acetate	12.5	12.68	12.5	12.63	101	101	40-185	0	30
Vinyl Chloride	5.00	5.18	5.00	5.11	104	102	62-128	1	30
m+p-Xylene	10	10.12	10	10.36	101	104	80-120	2	30
o-Xylene	5.00	4.97	5.00	5.13	99	103	80-120	3	30
	mg/l	mg/l	mg/l	mg/l					
Batch number: 162280018A	Sample number(s): 8510419-8510425								
DRO C12-C24 w/Si Gel	0.800	0.426	0.800	0.709	53*	89	60-120	50*	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16218972131A	Sample number(s): 8510422,8510425								
Nitrate Nitrogen	0.750	0.737			98		90-110		
Sulfate	7.50	7.35			98		90-110		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16229807801A	Sample number(s): 8510422,8510425								
SGT-HEM (TPH)	20	17.3	20	15.9	87	80	64-114	8	18
Batch number: 16229807901A	Sample number(s): 8510422,8510425								
HEM (oil & grease)	40	38.6	40	38	97	95	78-114	2	11

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16218972131A	Sample number(s): 8510422,8510425 UNSPK: 8510425									
Nitrate Nitrogen	3.87	5.00	8.61			95		90-110		
Sulfate	14.98	50	62.43			95		90-110		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16229807801A	Sample number(s): 8510422,8510425 UNSPK: 8510422									
SGT-HEM (TPH)	5.0 U	21.3	15.64			73		64-132		
Batch number: 16229807901A	Sample number(s): 8510422,8510425 UNSPK: 8510422									
HEM (oil & grease)	5.0 U	42.6	40.21			94		78-114		

*- 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: 08/25/2016 07:39

Group Number: 1691407

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: 16218972131A	Sample number(s): 8510422,8510425		BKG: 8510425	
Nitrate Nitrogen	3.87	3.93	1	15
Sulfate	14.98	14.92	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 Boeing 38
Batch number: H162232AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8510422	102	104	98	101
8510425	99	101	101	101
8510426	98	98	102	99
Blank	100	98	100	98
LCS	104	104	98	100
LCSD	100	100	101	101
Limits:	77-114	74-113	77-110	78-110

Analysis Name: NWTPH-Dx Water w/ Silica Gel
Batch number: 162280018A

	Chlorobenzene	Orthoterphenyl
8510419	92	90
8510420	88	79
8510421	95	94
8510422	108	104
8510423	111	107
8510424	91	89
8510425	87	89
Blank	120	116
LCS	95	87
LCSD	98	110
Limits:	50-150	50-150

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1691407 Sample # 851641 9-26

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 02516.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify): _____
Sampler: EMW # of Coolers: 3

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	TPH-Dx	VOC (38 List)	FOG	Sulfate	Nitrate	(4) Analyses Requested	(5) Remarks/Comments
LAI-1-0816	8/3/16	1415	H2O	2	X						
LAI-2-0816	"	1515	"	2	X						
LAI-3-0816	"	1540	"	2	X						
LAI-4-0916	8/4/16	1100	"	10	X	X	X	X	X		
LAI-5-0816	8/4/16	1205	"	2	X						
LAI-6-0816	8/4/16	1240	"	2	X						
LAI-7-0816	8/4/16	0955	"	10	X	X	X	X	X		
TripBlanks	7/15/16	—	H2O	2							

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	8/4/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 7:46 / 1000

Relinquished by commercial carrier (circle): UPS FedEx Other: _____

Temperature upon Receipt: 1.4-3.4 °C

Custody Seals Intact?: Yes No

(7)

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Sample Administration Receipt Documentation Log

Doc Log ID: 156970

Group Number(s): 169407

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/05/2016 10:00
Number of Packages:	3	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:	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 12:00 on 08/05/2016

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	1.4	DT	Wet	Y	Bagged	N
2	DT131	3.4	DT	Wet	Y	Bagged	N
3	DT131	1.7	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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:

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

Prepared for:

The Boeing Company

Report Date: August 25, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 08/10/2016
Group Number: 1693021
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-13-0816 Water	8517585
BOP-09i-0816 Water	8517586
BOP-10i-0816 Water	8517587
BOP-48i-0816 Water	8517588
BOP-56i-0816 Water	8517589
BOP-59i-0816 Water	8517590
BOP-78i-0816 Water	8517591
BOP-79i-0816 Water	8517592
BOP-84i-0816 Water	8517593
BOP-85i-0816 Water	8517594
BOP-86i-0816 Water	8517595
BOP-87i-0816 Water	8517596
BOP-x-0816 Water	8517597
Trip Blank Water	8517598
BOP-72i-0816 Water	8517599
BOP-72i-0816 Total Metals Water	8517600
BOP-72i-0816 Dissolved Metals Water	8517601
BOP-75i-0816 Water	8517602
BOP-75i-0816 Total Metals Water	8517603
BOP-75i-0816 Dissolved Metals Water	8517604
BOP-76i-0816 Water	8517605
BOP-76i-0816 Total Metals Water	8517606
BOP-76i-0816 Dissolved Metals Water	8517607
BOP-73i-0816 Water	8517608
BOP-73i-0816 Total Metals Water	8517609
BOP-73i-0816 Dissolved Metals Water	8517610
BOP-77i-0816 Water	8517611
BOP-77i-0816 Total Metals Water	8517612
BOP-77i-0816 Dissolved Metals Water	8517613
BOP-74i-0816 Water	8517614
BOP-74i-0816 Total Metals Water	8517615
BOP-74i-0816 Dissolved Metals Water	8517616

BOP-88i-0816 Water	8517617
BOP-88i-0816 Total Metals Water	8517618
BOP-88i-0816 Dissolved Metals Water	8517619

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,

Kay Hower

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1693021

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.

Preservation requirements were not met. Preservation requirements were not met.

Analysis Specific Comments:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8517608

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample #s: 8517617

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27

Sample #s: 8517611

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
2-Hexanone	-32

Sample #s: 8517602

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloroethane	-24
Acetone	-29

Sample #s: 8517605

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-29

Sample #s: 8517614

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Hexanone	-36

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-32
Acetone	-29
4-Methyl-2-Pentanone	-34

Sample #s: 8517592

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial 2 are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Batch #: H162281AA (Sample number(s): 8517592, 8517608)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: 1,1-Dichloroethene, 112Trichloro122Trifluoroethane

Batch #: H162291AA (Sample number(s): 8517611, 8517617 UNSPK: P521864)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: 112Trichloro122Trifluoroethane

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: 1,1-Dichloroethene, 112Trichloro122Trifluoroethane

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: 2-Butanone

Batch #: H162301AA (Sample number(s): 8517602, 8517605, 8517614)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 4-Methyl-2-pentanone, 2-Hexanone

RSKSOP-175 modified, GC Miscellaneous

Sample #s: 8517617

The container used for this analysis was submitted with headspace.

Batch #: 162250009A (Sample number(s): 8517599, 8517602, 8517605, 8517608, 8517611, 8517617 UNSPK: P522377)

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

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 8517617, 8517617RE

SW-846 6010C, Metals

Batch #: 162240635002 (Sample number(s): 8517600-8517601, 8517603-8517604, 8517606-8517607, 8517609-8517610, 8517612-8517613, 8517615-8517616, 8517618-8517619 UNSPK: 8517600 BKG: 8517600)

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

SW-846 6010C, Metals Dissolved

Batch #: 162240635002 (Sample number(s): 8517600-8517601, 8517603-8517604, 8517606-8517607, 8517609-8517610, 8517612-8517613, 8517615-8517616, 8517618-8517619 UNSPK: 8517600 BKG: 8517600)

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

SM 5310 C-2000, Wet Chemistry

Batch #: 16235298702B (Sample number(s): 8517602, 8517605, 8517608, 8517611 UNSPK: P516224 BKG: P516224)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Batch #: 16236298703A (Sample number(s): 8517614, 8517617 UNSPK: P521969 BKG: P521969)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Sample Description: E-13-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517585
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/04/2016 07:50 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BPE13

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**12**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 14:47	Kerri E Legerlotz	1

Sample Description: E-13-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517585
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/04/2016 07:50 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BPE13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 14:47	Kerri E Legerlotz	1

Sample Description: BOP-09i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517586
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 08:55 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP9I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**50**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1.2**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.5**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**11**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**3.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**40**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**63**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: BOP-09i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517586
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 08:55 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP9I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**10**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**2.5**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**35**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 18:51	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162251AA	08/12/2016 19:12	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 18:51	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162251AA	08/12/2016 19:12	Kerri E Legerlotz	10

Sample Description: BOP-10i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517587
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP10

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**50**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**6.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**13**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 15:08	Kerri E Legerlotz	1

Sample Description: BOP-10i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517587
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 15:08	Kerri E Legerlotz	1

Sample Description: BOP-48i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517588
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:35 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP48

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**68**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 15:28	Kerri E Legerlotz	1

Sample Description: BOP-48i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517588
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:35 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP48

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 15:28	Kerri E Legerlotz	1

Sample Description: BOP-56i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517589
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:05 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP56

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**44**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**3.9**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**11**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 15:49	Kerri E Legerlotz	1

Sample Description: BOP-56i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517589
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:05 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP56

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 15:49	Kerri E Legerlotz	1

Sample Description: BOP-59i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517590
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP59

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**48**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.0**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**5.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 16:09	Kerri E Legerlotz	1

Sample Description: BOP-59i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517590
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 09:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP59

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 16:09	Kerri E Legerlotz	1

Sample Description: BOP-78i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517591
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP78

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**67**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**31**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**4.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**24**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.5**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.7**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**13**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-78i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517591
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP78

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 16:29	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 16:29	Kerri E Legerlotz	1

Sample Description: BOP-79i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517592
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:30 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP79

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**860**	**E**	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**320**	**E**	5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.9**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.2**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.4**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**63**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**3.0**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.4**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**760**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	**2-Butanone**	78-93-3	**280**		50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-79i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517592
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:30 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP79

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.7**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	Trichloroethene	79-01-6	2.0	U	2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	**Vinyl Chloride**	75-01-4	**2.8**		2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial 2 are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 16:49	Kerri E Legerlotz	1

Sample Description: BOP-79i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517592
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:30 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP79

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162281AA	08/15/2016 15:11	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 16:49	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162281AA	08/15/2016 15:11	Kerri E Legerlotz	10

Sample Description: BOP-84i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517593
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:45 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP84

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**75**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.7**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.0**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.7**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.7**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-84i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517593
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:45 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP84

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 17:10	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 17:10	Kerri E Legerlotz	1

Sample Description: BOP-85i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517594
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP85

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**71**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**110**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.8**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.0**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.4**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.6**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.9**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-85i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517594
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP85

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 19:32	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 19:32	Kerri E Legerlotz	1

Sample Description: BOP-86i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517595
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:00 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP86

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**38**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**45**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.1**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1.4**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.5**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.6**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**5.0**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.7**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-86i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517595
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:00 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP86

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 17:30	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 17:30	Kerri E Legerlotz	1

Sample Description: BOP-87i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517596
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP87

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**68**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**35**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.8**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.7**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.9**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	**4-Methyl-2-pentanone**	108-10-1	**6.4**		5.0	1
11996	**Methylene Chloride**	75-09-2	**2.0**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.8**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: BOP-87i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517596
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 10:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP87

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 17:50	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 17:50	Kerri E Legerlotz	1

Sample Description: BOP-x-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517597
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 08:00 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOPX-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**56**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**1.9**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**5.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 18:11	Kerri E Legerlotz	1

Sample Description: BOP-x-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517597
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/08/2016 08:00 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOPX-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 18:11	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517598
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/04/2016

The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP-T

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 14:27	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 14:27	Kerri E Legerlotz	1

Sample Description: BOP-72i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517599
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 09:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP72

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**60**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**4.1**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**6.5**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**5.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**6,800**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	250	U	250	50
07105	Ethane	74-84-0	250	U	250	50
07105	Ethene	74-85-1	250	U	250	50

Sample Description: BOP-72i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517599
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 09:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP72

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		ug/l		ug/l	
07105	**Methane**	74-82-8	**9,900**		250	50
Wet Chemistry	**EPA 300.0**		mg/l		mg/l	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**16.5**		10.0	10
	SM 5310 C-2000		mg/l		mg/l	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		mg/l		mg/l	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 18:31	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 18:31	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 12:08	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 11:17	Johanna C Kennedy	50
00368	Nitrate Nitrogen	EPA 300.0	1	16223667131A	08/10/2016 17:18	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16223667131A	08/10/2016 17:33	Drew M Gerhart	10
00273	Total Organic Carbon	SM 5310 C-2000	1	16235298701B	08/22/2016 23:32	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16225133301A	08/12/2016 09:31	Tyler W Wise	1

Sample Description: BOP-72i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517600
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 09:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**16.8**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 17:28	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

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Analysis Report

Sample Description: BOP-72i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517601
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 09:25 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**16.5**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 17:49	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-75i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517602
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP75

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**65**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**0.5**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.2**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.0**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**4.7**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

Sample Description: BOP-75i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517602
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP75

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloroethane	-24
Acetone	-29

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	**13,000**		**E**	5.0	1
Trial ID: DL							
07105	Acetylene	74-86-2	500	U		500	100
07105	Ethane	74-84-0	500	U		500	100
07105	Ethene	74-85-1	500	U		500	100
07105	**Methane**	74-82-8	**18,000**			500	100
Wet Chemistry		**EPA 300.0**	**mg/l**			**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U		0.10	1
00228	**Sulfate**	14808-79-8	**6.0**			1.0	1
		SM 5310 C-2000	**mg/l**			**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.9**			1.0	1
		EPA 376.1	**mg/l**			**mg/l**	
01333	Sulfide	18496-25-8	2.0	U		2.0	1

Sample Comments

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

Sample Description: BOP-75i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517602
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 17:00	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 17:00	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 12:27	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 11:36	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16223667131A	08/10/2016 17:47	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16223667131A	08/10/2016 17:47	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16235298702B	08/23/2016 05:38	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16225133301A	08/12/2016 09:31	Tyler W Wise	1

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Analysis Report

Sample Description: BOP-75i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517603
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**15.1**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 17:52	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-75i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517604
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**13.5**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:02	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-76i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517605
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:50 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP76

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**56**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.8**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.5**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**11**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.9**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**4.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

Sample Description: BOP-76i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517605
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:50 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP76

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone					
	The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. The affected analyte(s) and response(s) are:					
	Analyte Response (%Drift) Acetone -29					
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	**12,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**14,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**6.7**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**7.8**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

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

Sample Description: BOP-76i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517605
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:50 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP76

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 17:20	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 17:20	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 12:47	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 11:55	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16223667131A	08/10/2016 18:17	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16223667131A	08/10/2016 18:17	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16235298702B	08/23/2016 06:03	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16225133301A	08/12/2016 09:31	Tyler W Wise	1

Sample Description: BOP-76i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517606
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:50 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**9.40**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:06	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

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Analysis Report

Sample Description: BOP-76i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517607
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 10:50 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**7.15**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:09	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-73i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517608
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 11:30 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP73

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**41**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	**Chloroethane**	75-00-3	**0.7**		0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**2.4**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.7**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.5**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	

Sample Description: BOP-73i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517608
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 11:30 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP73

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
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	**54**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**4,400**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	20
07105	Ethane	74-84-0	100	U	100	20
07105	Ethene	74-85-1	100	U	100	20
07105	**Methane**	74-82-8	**6,800**		100	20
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**8.0**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.3**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162281AA	08/15/2016 16:12	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162281AA	08/15/2016 16:12	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 13:06	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 12:15	Johanna C Kennedy	20
00368	Nitrate Nitrogen	EPA 300.0	1	16223667131A	08/10/2016 18:47	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16223667131A	08/10/2016 18:47	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16235298702B	08/23/2016 06:28	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16225133301A	08/12/2016 09:31	Tyler W Wise	1

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Analysis Report

Sample Description: BOP-73i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517609
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 11:30 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	mg/l	mg/l	
01754	**Iron**	7439-89-6	**13.4**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:12	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

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Analysis Report

Sample Description: BOP-73i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517610
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 11:30 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**11.3**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:16	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-77i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517611
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 13:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**66**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**42**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**37**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**2.5**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**6.0**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	**Toluene**	108-88-3	**1.7**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.1**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**66**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-77i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517611
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 13:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**33**		2.0	10
11996	**trans-1,2-Dichloroethene**	156-60-5	**2.1**		2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**2.6**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Sample Description: BOP-77i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517611
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 13:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Analyte		Response (%Drift)				
2-Butanone		-27				
2-Hexanone		-32				
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	**6.0**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**4,300**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	20
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	100	U	100	20
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	100	U	100	20
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**16,000**		500	100
07105	**Methane**	74-82-8	**18,000**	**E**	100	20
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.51**		0.10	1
00228	**Sulfate**	14808-79-8	**165**		100	100
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1,450**		100	100
	EPA 376.1		**mg/l**		**mg/l**	
01333	**Sulfide**	18496-25-8	**9.2**		2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 13:32	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162291AA	08/16/2016 13:53	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 13:32	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162291AA	08/16/2016 13:53	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 13:25	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 12:35	Johanna C Kennedy	20
07105	AMEE by RSK-175	RSKSOP-175 modified	3-DL	162250009A	08/16/2016 10:13	Johanna C Kennedy	100

Sample Description: BOP-77i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517611
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 13:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP77

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00368	Nitrate Nitrogen	EPA 300.0	1	16223667131A	08/11/2016 09:19	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16223667131A	08/13/2016 21:27	Drew M Gerhart	100
00273	Total Organic Carbon	SM 5310 C-2000	1	16235298702B	08/23/2016 06:41	Clinton M Wilson	100
01333	Sulfide	EPA 376.1	1	16225133301A	08/12/2016 09:31	Tyler W Wise	1

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Analysis Report

Sample Description: BOP-77i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517612
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 13:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**289**	2.00	5

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 19:04	Elaine F Stoltzfus	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

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Analysis Report

Sample Description: BOP-77i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517613
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 13:10 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**282**	2.00	5

Sample Comments

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
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:34	Elaine F Stoltzfus	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-74i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517614
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 14:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP74

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**65**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**58**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.6**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.0**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.5**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**11**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.8**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Hexanone	-36

Sample Description: BOP-74i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517614
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 14:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP74

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-32
Acetone	-29
4-Methyl-2-Pentanone	-34

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	**16,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**18,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.45**		0.10	1
00228	**Sulfate**	14808-79-8	**453**		100	100
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1,840**		100	100
	EPA 376.1		**mg/l**		**mg/l**	
01333	**Sulfide**	18496-25-8	**5.4**		4.0	2

Sample Comments

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

Sample Description: BOP-74i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517614
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 14:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP74

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 16:20	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 16:20	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162280013A	08/15/2016 11:21	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162280013A	08/16/2016 10:27	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16223667131A	08/11/2016 09:49	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16223667131A	08/10/2016 21:00	Drew M Gerhart	100
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298703A	08/24/2016 07:43	Clinton M Wilson	100
01333	Sulfide	EPA 376.1	1	16225133301A	08/12/2016 09:31	Tyler W Wise	2

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Analysis Report

Sample Description: BOP-74i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517615
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 14:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**443**	2.00	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 19:01	Elaine F Stoltzfus	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-74i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517616
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 14:15 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**493**	2.00	5

Sample Comments

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
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:40	Elaine F Stoltzfus	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Sample Description: BOP-88i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517617
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 15:20 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP88

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**85**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**280**	**E**	5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.9**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.7**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**110**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.2**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.9**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**7.0**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**130**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	**2-Butanone**	78-93-3	**320**		50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-88i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517617
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 15:20 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP88

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	**Chloroform**	67-66-3	**2.4**		2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**100**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**7.3**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	**Vinyl Chloride**	75-01-4	**4.8**		2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Sample Description: BOP-88i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517617
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 15:20 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP88

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Analyte	Response (%Drift)					
2-Butanone	-27					
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	**9.3**		5.0	1
07105	**Methane**	74-82-8	**10,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**14,000**		500	100
Trial ID: RE						
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	**13**		5.0	1
07105	**Methane**	74-82-8	**10,000**	**E**	5.0	1
The container used for this analysis was submitted with headspace.						
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**4.8**		1.0	10
00228	**Sulfate**	14808-79-8	**2,330**		500	500
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**10,000**		200	200
	EPA 376.1		**mg/l**		**mg/l**	
01333	**Sulfide**	18496-25-8	**78.4**		40.0	20

Sample Comments

Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for TOC.
Preservation requirements were not met. The pH preservation of all non-volatile containers was checked upon receipt at the laboratory. The container for the following analysis was not within specification and was adjusted accordingly by the laboratory: Total Organic Carbon, Sulfide

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

Sample Description: BOP-88i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517617
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 15:20 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

BOP88

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 14:13	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162291AA	08/16/2016 14:33	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 14:13	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162291AA	08/16/2016 14:33	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 14:04	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 12:54	Johanna C Kennedy	100
07105	AMEE by RSK-175	RSKSOP-175 modified	3-RE	162250009A	08/15/2016 19:04	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16223667131A	08/10/2016 21:30	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16223667131A	08/10/2016 22:00	Drew M Gerhart	500
00273	Total Organic Carbon	SM 5310 C-2000	1	16236298703A	08/24/2016 07:56	Clinton M Wilson	200
01333	Sulfide	EPA 376.1	1	16225133301A	08/12/2016 09:31	Tyler W Wise	20

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Analysis Report

Sample Description: BOP-88i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517618
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 15:20 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	mg/l	mg/l	
01754	**Iron**	7439-89-6	**2,570**	10.0	5

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:44	Elaine F Stoltzfus	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

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Analysis Report

Sample Description: BOP-88i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8517619
LL Group # 1693021
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/09/2016 15:20 by EMW The Boeing Company

Submitted: 08/10/2016 09:25
Reported: 08/25/2016 15:22

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**2,660**	4.00	10

Sample Comments

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
01754	Iron	SW-846 6010C	1	162240635002	08/14/2016 18:54	Elaine F Stoltzfus	10
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162240635002	08/14/2016 05:00	James L Mertz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

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: H162251AA	Sample number(s): 8517585-8517599		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162281AA	Sample number(s): 8517592,8517608		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 08/25/2016 15:22

Group Number: 1693021

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162291AA	Sample number(s): 8517611,8517617		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5

*- Outside of specification
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(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162301AA	Sample number(s): 8517602,8517605,8517614		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0

*- Outside of specification
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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 162250009A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517617		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
Batch number: 162280013A	Sample number(s): 8517614		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 162240635002	Sample number(s): 8517600-8517601,8517603-8517604,8517606-8517607,8517609-8517610,8517612-8517613,8517615-8517616,8517618-8517619		
Iron	0.400	U	0.400
Batch number: 16223667131A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517614,8517617		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16235298701B	Sample number(s): 8517599		
Total Organic Carbon	1.0	U	1.0
Batch number: 16235298702B	Sample number(s): 8517602,8517605,8517608,8517611		
Total Organic Carbon	1.0	U	1.0
Batch number: 16236298703A	Sample number(s): 8517614,8517617		
Total Organic Carbon	1.0	U	1.0
Batch number: 16225133301A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517614,8517617		
Sulfide	2.0	U	2.0

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

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: H162251AA	Sample number(s): 8517585-8517599								
Acetone	37.5	33.55	37.5	33.25	89	89	65-124	1	30
Benzene	5.00	5.39	5.00	5.06	108	101	80-120	6	30
Bromodichloromethane	5.00	5.39	5.00	5.07	108	101	80-120	6	30
Bromoform	5.00	5.08	5.00	4.63	102	93	62-128	9	30
Bromomethane	5.00	4.98	5.00	4.68	100	94	71-126	6	30
2-Butanone	37.5	31.04	37.5	33.06	83	88	66-135	6	30
Carbon Disulfide	5.00	5.22	5.00	4.70	104	94	65-120	10	30
Carbon Tetrachloride	5.00	5.68	5.00	5.23	114	105	65-134	8	30
Chlorobenzene	5.00	5.18	5.00	4.80	104	96	80-120	8	30
Chloroethane	5.00	4.76	5.00	4.49	95	90	71-122	6	30
Chloroform	5.00	5.32	5.00	4.95	106	99	80-120	7	30
Chloromethane	5.00	4.91	5.00	4.50	98	90	63-121	9	30
Dibromochloromethane	5.00	5.23	5.00	4.77	105	95	68-131	9	30
1,1-Dichloroethane	5.00	5.60	5.00	5.17	112	103	75-120	8	30
1,2-Dichloroethane	5.00	5.14	5.00	4.93	103	99	72-127	4	30
1,1-Dichloroethene	5.00	5.87	5.00	5.37	117	107	70-120	9	30
cis-1,2-Dichloroethene	5.00	5.50	5.00	5.13	110	103	80-120	7	30
trans-1,2-Dichloroethene	5.00	5.68	5.00	5.32	114	106	80-120	7	30
1,2-Dichloropropane	5.00	5.46	5.00	5.13	109	103	80-120	6	30
cis-1,3-Dichloropropene	5.00	5.24	5.00	4.85	105	97	80-124	8	30
trans-1,3-Dichloropropene	5.00	4.88	5.00	4.56	98	91	77-121	7	30
Ethylbenzene	5.00	5.16	5.00	4.70	103	94	80-120	9	30
2-Hexanone	25	20.11	25	21.75	80	87	73-128	8	30
4-Methyl-2-pentanone	25	21.25	25	21.85	85	87	71-129	3	30
Methylene Chloride	5.00	5.49	5.00	5.07	110	101	80-120	8	30
Styrene	5.00	5.13	5.00	4.79	103	96	80-122	7	30
1,1,2,2-Tetrachloroethane	5.00	4.90	5.00	4.58	98	92	80-120	7	30
Tetrachloroethene	5.00	5.21	5.00	4.78	104	96	80-120	8	30
Toluene	5.00	5.20	5.00	4.77	104	95	80-120	9	30
112Trichloro122Trifluoroethane	5.00	5.88	5.00	5.33	118	107	75-120	10	30
1,1,1-Trichloroethane	5.00	5.42	5.00	5.02	108	100	70-124	8	30
1,1,2-Trichloroethane	5.00	5.13	5.00	4.82	103	96	80-120	6	30
Trichloroethene	5.00	5.46	5.00	5.14	109	103	80-120	6	30
Trichlorofluoromethane	5.00	5.58	5.00	5.00	112	100	64-133	11	30
Vinyl Acetate	12.5	12.11	12.5	11.98	97	96	40-185	1	30
Vinyl Chloride	5.00	5.09	5.00	4.62	102	92	62-128	10	30
m+p-Xylene	10	10.45	10	9.56	104	96	80-120	9	30
o-Xylene	5.00	5.09	5.00	4.72	102	94	80-120	7	30
Batch number: H162281AA	Sample number(s): 8517592,8517608								
Acetone	37.5	29.95	37.5	29.52	80	79	65-130	1	30
Benzene	5.00	5.61	5.00	5.33	112	107	80-120	5	30
Bromodichloromethane	5.00	5.45	5.00	5.21	109	104	80-120	5	30
Bromoform	5.00	5.01	5.00	4.82	100	96	62-128	4	30
Bromomethane	5.00	4.85	5.00	4.77	97	95	62-131	2	30
2-Butanone	37.5	29.92	37.5	30.16	80	80	66-135	1	30
Carbon Disulfide	5.00	5.91	5.00	5.57	118	111	65-120	6	30
Carbon Tetrachloride	5.00	5.79	5.00	5.49	116	110	79-124	5	30
Chlorobenzene	5.00	5.12	5.00	5.00	102	100	80-120	2	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
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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: 08/25/2016 15:22

Group Number: 1693021

LCS/LCSD (continued)

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
Chloroethane	5.00	4.76	5.00	4.56	95	91	63-125	4	30
Chloroform	5.00	5.38	5.00	5.18	108	104	80-120	4	30
Chloromethane	5.00	4.86	5.00	4.69	97	94	55-126	3	30
Dibromochloromethane	5.00	5.10	5.00	4.98	102	100	78-127	2	30
1,1-Dichloroethane	5.00	5.70	5.00	5.47	114	109	75-120	4	30
1,2-Dichloroethane	5.00	5.23	5.00	5.13	105	103	72-127	2	30
1,1-Dichloroethene	5.00	6.07	5.00	5.75	121*	115	76-120	5	30
cis-1,2-Dichloroethene	5.00	5.61	5.00	5.30	112	106	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.91	5.00	5.61	118	112	80-120	5	30
1,2-Dichloropropane	5.00	5.68	5.00	5.32	114	106	80-120	6	30
cis-1,3-Dichloropropene	5.00	5.27	5.00	5.05	105	101	80-124	4	30
trans-1,3-Dichloropropene	5.00	4.88	5.00	4.73	98	95	77-121	3	30
Ethylbenzene	5.00	5.07	5.00	4.93	101	99	80-120	3	30
2-Hexanone	25	18.97	25	18.88	76	76	73-128	0	30
4-Methyl-2-pentanone	25	19.44	25	19.39	78	78	71-129	0	30
Methylene Chloride	5.00	5.66	5.00	5.40	113	108	80-120	5	30
Styrene	5.00	5.11	5.00	4.93	102	99	80-120	4	30
1,1,2,2-Tetrachloroethane	5.00	4.75	5.00	4.75	95	95	75-123	0	30
Tetrachloroethene	5.00	5.12	5.00	4.92	102	98	80-120	4	30
Toluene	5.00	5.18	5.00	5.06	104	101	80-120	2	30
112Trichloro122Trifluoroethane	5.00	6.33	5.00	6.02	127*	120	75-120	5	30
1,1,1-Trichloroethane	5.00	5.53	5.00	5.28	111	106	79-120	5	30
1,1,2-Trichloroethane	5.00	5.17	5.00	4.98	103	100	80-120	4	30
Trichloroethene	5.00	5.63	5.00	5.35	113	107	80-120	5	30
Trichlorofluoromethane	5.00	5.40	5.00	5.12	108	102	71-131	5	30
Vinyl Acetate	12.5	12.18	12.5	12.11	97	97	63-122	1	30
Vinyl Chloride	5.00	4.99	5.00	4.76	100	95	62-128	5	30
m+p-Xylene	10	10.31	10	9.95	103	100	80-120	4	30
o-Xylene	5.00	5.03	5.00	4.89	101	98	80-120	3	30
Batch number: H162291AA	Sample number(s): 8517611,8517617								
Acetone	37.5	31.85			85		65-130		
Benzene	5.00	5.29			106		80-120		
Bromodichloromethane	5.00	5.17			103		80-120		
Bromoform	5.00	4.98			100		62-128		
Bromomethane	5.00	4.51			90		62-131		
2-Butanone	37.5	29.99			80		66-135		
Carbon Disulfide	5.00	5.51			110		65-120		
Carbon Tetrachloride	5.00	5.48			110		79-124		
Chlorobenzene	5.00	5.10			102		80-120		
Chloroethane	5.00	4.22			84		63-125		
Chloroform	5.00	5.13			103		80-120		
Chloromethane	5.00	4.11			82		55-126		
Dibromochloromethane	5.00	4.99			100		78-127		
1,1-Dichloroethane	5.00	5.24			105		75-120		
1,2-Dichloroethane	5.00	4.73			95		72-127		
1,1-Dichloroethene	5.00	5.88			118		76-120		
cis-1,2-Dichloroethene	5.00	5.50			110		80-120		
trans-1,2-Dichloroethene	5.00	5.78			116		80-120		
1,2-Dichloropropane	5.00	5.17			103		80-120		

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

LCS/LCSD (continued)

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
cis-1,3-Dichloropropene	5.00	4.99			100		80-124		
trans-1,3-Dichloropropene	5.00	4.59			92		77-121		
Ethylbenzene	5.00	4.93			99		80-120		
2-Hexanone	25	19.04			76		73-128		
4-Methyl-2-pentanone	25	19.28			77		71-129		
Methylene Chloride	5.00	5.46			109		80-120		
Styrene	5.00	5.00			100		80-120		
1,1,2,2-Tetrachloroethane	5.00	4.78			96		75-123		
Tetrachloroethene	5.00	5.09			102		80-120		
Toluene	5.00	5.07			101		80-120		
112Trichloro122Trifluoroethane	5.00	6.04			121*		75-120		
1,1,1-Trichloroethane	5.00	5.25			105		79-120		
1,1,2-Trichloroethane	5.00	5.04			101		80-120		
Trichloroethene	5.00	5.51			110		80-120		
Trichlorofluoromethane	5.00	5.11			102		71-131		
Vinyl Acetate	12.5	10.62	12.5	10.82	85	87	63-122	2	30
Vinyl Chloride	5.00	4.31			86		62-128		
m+p-Xylene	10	10.1			101		80-120		
o-Xylene	5.00	4.96			99		80-120		
Batch number: H162301AA	Sample number(s): 8517602,8517605,8517614								
Acetone	37.5	28.51	37.5	28.08	76	75	65-130	2	30
Benzene	5.00	5.12	5.00	4.87	102	97	80-120	5	30
Bromodichloromethane	5.00	4.97	5.00	4.73	99	95	80-120	5	30
Bromoform	5.00	5.01	5.00	4.65	100	93	62-128	7	30
Bromomethane	5.00	4.63	5.00	4.56	93	91	62-131	1	30
2-Butanone	37.5	26.62	37.5	26.71	71	71	66-135	0	30
Carbon Disulfide	5.00	5.27	5.00	4.99	105	100	65-120	5	30
Carbon Tetrachloride	5.00	5.48	5.00	5.07	110	101	79-124	8	30
Chlorobenzene	5.00	5.34	5.00	4.98	107	100	80-120	7	30
Chloroethane	5.00	4.26	5.00	4.10	85	82	63-125	4	30
Chloroform	5.00	4.91	5.00	4.63	98	93	80-120	6	30
Chloromethane	5.00	4.46	5.00	4.27	89	85	55-126	4	30
Dibromochloromethane	5.00	5.18	5.00	4.97	104	99	78-127	4	30
1,1-Dichloroethane	5.00	5.10	5.00	4.81	102	96	75-120	6	30
1,2-Dichloroethane	5.00	4.57	5.00	4.36	91	87	72-127	5	30
1,1-Dichloroethene	5.00	5.72	5.00	5.38	114	108	76-120	6	30
cis-1,2-Dichloroethene	5.00	5.37	5.00	5.04	107	101	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.52	5.00	5.27	110	105	80-120	5	30
1,2-Dichloropropane	5.00	4.96	5.00	4.73	99	95	80-120	5	30
cis-1,3-Dichloropropene	5.00	4.76	5.00	4.49	95	90	80-124	6	30
trans-1,3-Dichloropropene	5.00	4.71	5.00	4.40	94	88	77-121	7	30
Ethylbenzene	5.00	5.14	5.00	4.80	103	96	80-120	7	30
2-Hexanone	25	16.94	25	16.68	68*	67*	73-128	2	30
4-Methyl-2-pentanone	25	16.95	25	16.73	68*	67*	71-129	1	30
Methylene Chloride	5.00	5.23	5.00	4.91	105	98	80-120	6	30
Styrene	5.00	5.19	5.00	4.85	104	97	80-120	7	30
1,1,2,2-Tetrachloroethane	5.00	4.74	5.00	4.63	95	93	75-123	2	30
Tetrachloroethene	5.00	5.40	5.00	5.01	108	100	80-120	8	30
Toluene	5.00	5.24	5.00	4.93	105	99	80-120	6	30

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

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

LCS/LCSD (continued)

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					
112Trichloro122Trifluoroethane	5.00	6.00	5.00	5.46	120	109	75-120	9	30
1,1,1-Trichloroethane	5.00	5.24	5.00	4.85	105	97	79-120	8	30
1,1,2-Trichloroethane	5.00	5.24	5.00	4.98	105	100	80-120	5	30
Trichloroethene	5.00	5.40	5.00	5.06	108	101	80-120	6	30
Trichlorofluoromethane	5.00	5.36	5.00	4.98	107	100	71-131	7	30
Vinyl Acetate	12.5	10.53	12.5	9.32	84	75	63-122	12	30
Vinyl Chloride	5.00	4.71	5.00	4.49	94	90	62-128	5	30
m+p-Xylene	10	10.49	10	9.87	105	99	80-120	6	30
o-Xylene	5.00	5.16	5.00	4.88	103	98	80-120	6	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162250009A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517617								
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		
Batch number: 162280013A	Sample number(s): 8517614								
Acetylene	51.2	50.39	51.2	44.43	98	87	61-148	13	20
Ethane	59.2	61.74	59.2	53.58	104	91	85-115	14	20
Ethene	60.8	63.36	60.8	54.97	104	90	83-115	14	20
Methane	59.8	64.13	59.8	54.86	107	92	85-115	16	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 162240635002	Sample number(s): 8517600-8517601,8517603-8517604,8517606-8517607,8517609-8517610,8517612-8517613,8517615-8517616,8517618-8517619								
Iron	1.00	1.02			102		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16223667131A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517614,8517617								
Nitrate Nitrogen	0.750	0.736			98		90-110		
Sulfate	7.50	7.39			99		90-110		
Batch number: 16235298701B	Sample number(s): 8517599								
Total Organic Carbon	25	25.96			104		91-113		
Batch number: 16235298702B	Sample number(s): 8517602,8517605,8517608,8517611								
Total Organic Carbon	25	25.79			103		91-113		
Batch number: 16236298703A	Sample number(s): 8517614,8517617								
Total Organic Carbon	25	26.34			105		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16225133301A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517614,8517617								
Sulfide	20	19.95	20	19.75	100	99	80-120	1	4

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

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: H162291AA	Sample number(s): 8517611,8517617 UNSPK: P521864										
Acetone	33.25		37.5	60.98	37.5	61.58	74	76	65-130	1	30
Benzene	0.2	U	5.00	5.33	5.00	5.53	107	111	80-120	4	30
Bromodichloromethane	0.5	U	5.00	5.07	5.00	5.49	101	110	80-120	8	30
Bromoform	0.5	U	5.00	4.88	5.00	5.45	98	109	62-128	11	30
Bromomethane	0.5	U	5.00	4.64	5.00	4.90	93	98	62-131	6	30
2-Butanone	5.0	U	37.5	44.47	37.5	26.54	119	71	66-135	51*	30
Carbon Disulfide	0.5	U	5.00	5.84	5.00	5.87	117	117	65-120	0	30
Carbon Tetrachloride	0.2	U	5.00	5.73	5.00	6.03	115	121	79-124	5	30
Chlorobenzene	0.5	U	5.00	5.23	5.00	5.65	105	113	80-120	8	30
Chloroethane	0.5	U	5.00	4.46	5.00	4.66	89	93	63-125	4	30
Chloroform	0.2	U	5.00	5.09	5.00	5.33	102	107	80-120	5	30
Chloromethane	0.5	U	5.00	4.34	5.00	4.60	87	92	55-126	6	30
Dibromochloromethane	0.5	U	5.00	5.14	5.00	5.64	103	113	78-127	9	30
1,1-Dichloroethane	0.5	U	5.00	5.31	5.00	5.40	106	108	75-120	2	30
1,2-Dichloroethane	0.2	U	5.00	4.53	5.00	4.74	91	95	72-127	5	30
1,1-Dichloroethene	0.2	U	5.00	6.12	5.00	6.44	122*	129*	76-120	5	30
cis-1,2-Dichloroethene	0.2	U	5.00	5.54	5.00	5.69	111	114	80-120	3	30
trans-1,2-Dichloroethene	0.2	U	5.00	5.86	5.00	5.97	117	119	80-120	2	30
1,2-Dichloropropane	0.5	U	5.00	5.09	5.00	5.43	102	109	80-120	6	30
cis-1,3-Dichloropropene	0.2	U	5.00	4.75	5.00	5.21	95	104	80-124	9	30
trans-1,3-Dichloropropene	0.2	U	5.00	4.53	5.00	4.97	91	99	77-121	9	30
Ethylbenzene	0.5	U	5.00	5.18	5.00	5.54	104	111	80-120	7	30
2-Hexanone	5.0	U	25	18.45	25	19.63	74	79	73-128	6	30
4-Methyl-2-pentanone	5.0	U	25	18.39	25	19.73	74	79	71-129	7	30
Methylene Chloride	0.5	U	5.00	5.26	5.00	5.36	105	107	80-120	2	30
Styrene	0.5	U	5.00	5.08	5.00	5.54	102	111	80-120	9	30
1,1,2,2-Tetrachloroethane	0.2	U	5.00	4.73	5.00	5.11	95	102	75-123	8	30
Tetrachloroethene	0.2	U	5.00	5.56	5.00	5.79	111	116	80-120	4	30
Toluene	0.2	U	5.00	5.31	5.00	5.68	106	114	80-120	7	30
112Trichloro122Trifluoroethane	0.5	U	5.00	6.53	5.00	6.60	131*	132*	75-120	1	30
1,1,1-Trichloroethane	0.5	U	5.00	5.46	5.00	5.67	109	113	79-120	4	30
1,1,2-Trichloroethane	0.2	U	5.00	5.03	5.00	5.61	101	112	80-120	11	30
Trichloroethene	0.201		5.00	5.78	5.00	6.09	112	118	80-120	5	30
Trichlorofluoromethane	0.5	U	5.00	5.50	5.00	5.97	110	119	71-131	8	30
Vinyl Chloride	0.2	U	5.00	4.71	5.00	5.01	94	100	62-128	6	30
m+p-Xylene	0.5	U	10	10.56	10	11.2	106	112	80-120	6	30
o-Xylene	0.5	U	5.00	5.09	5.00	5.48	102	110	80-120	8	30
	ug/l		ug/l	ug/l	ug/l	ug/l					
Batch number: 162250009A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517617 UNSPK: P522377										
Acetylene	5.0	U	51.2	45.92	51.2	49.76	90	97	61-148	8	20
Ethane	5.0	U	59.2	55.63	59.2	57.65	94	97	74-131	4	30
Ethene	5.0	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
	mg/l		mg/l	mg/l	mg/l	mg/l					

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

MS/MSD (continued)

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 162240635002	Sample number(s): 8517600-8517601,8517603-8517604,8517606-8517607,8517609-8517610,8517612-8517613,8517615-8517616,8517618-8517619 UNSPK: 8517600									
Iron	16.82	1.00	19.09	1.00	17.44	226 (2)	61 (2)	75-125	9	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16223667131A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517614,8517617 UNSPK: P516322									
Nitrate Nitrogen	2.77	5.00	7.68			98		90-110		
Sulfate	184.42	200	377.53			97		90-110		
Batch number: 16235298701B	Sample number(s): 8517599 UNSPK: P517561									
Total Organic Carbon	2.24	10	13.47			112		91-113		
Batch number: 16235298702B	Sample number(s): 8517602,8517605,8517608,8517611 UNSPK: P516224									
Total Organic Carbon	5.60	10	16.38			108		91-113		
Batch number: 16236298703A	Sample number(s): 8517614,8517617 UNSPK: P521969									
Total Organic Carbon	1.54	10	11.97			104		91-113		

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 162240635002	Sample number(s): 8517600-8517601,8517603-8517604,8517606-8517607,8517609-8517610,8517612-8517613,8517615-8517616,8517618-8517619 BKG: 8517600			
Iron	16.82	17.68	5	20
	mg/l	mg/l		
Batch number: 16223667131A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517614,8517617 BKG: P516322			
Nitrate Nitrogen	2.77	2.74	1	15
Sulfate	184.42	184.81	0	15
Batch number: 16235298701B	Sample number(s): 8517599 BKG: P517561			
Total Organic Carbon	2.24	2.17	3 (1)	3
Batch number: 16235298702B	Sample number(s): 8517602,8517605,8517608,8517611 BKG: P516224			
Total Organic Carbon	5.60	4.93	13* (1)	3
Batch number: 16236298703A	Sample number(s): 8517614,8517617 BKG: P521969			
Total Organic Carbon	1.54	1.66	8* (1)	3

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/25/2016 15:22

Group Number: 1693021

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: 16225133301A	Sample number(s): 8517599,8517602,8517605,8517608,8517611,8517614,8517617 BKG: P517448			
Sulfide	5.74	5.84	2 (1)	20

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 Boeing 38
Batch number: H162251AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8517585	103	101	97	99
8517586	102	101	98	99
8517586DL	103	98	98	97
8517587	102	98	98	99
8517588	103	104	96	100
8517589	102	99	98	99
8517590	101	103	99	100
8517591	107	102	94	101
8517592	106	102	95	100
8517593	107	106	94	102
8517594	101	99	98	98
8517595	106	101	94	101
8517596	105	102	96	101
8517597	104	101	96	100
8517598	104	103	95	99
8517599	104	102	97	100
Blank	103	102	97	98
LCS	105	102	95	102
LCSD	106	101	95	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162281AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8517592DL	102	102	99	100
8517608	100	103	99	99
Blank	102	106	98	98
LCS	107	104	95	101
LCSD	104	102	96	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162291AA

*- 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: 08/25/2016 15:22

Group Number: 1693021

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.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8517611	104	103	94	98
8517611DL	103	100	96	97
8517617	101	100	98	98
8517617DL	100	97	97	96
Blank	101	102	97	96
LCS	104	100	96	96
LCSD	101	101	97	97
MS	102	101	98	97
MSD	100	103	97	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162301AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8517602	104	104	96	96
8517605	103	98	97	96
8517614	103	100	95	95
Blank	103	100	96	95
LCS	100	102	99	97
LCSD	101	100	99	96
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 162250009A

	Propene
8517599	84
8517599DL	106
8517602	91
8517602DL	106
8517605	82
8517605DL	107
8517608	74
8517608DL	104
8517611	96
8517611DL	103
8517617	156*
8517617DL	105
8517617RE	251*
Blank	107
LCS	109
MS	96
MSD	97
Limits:	44-123

Analysis Name: AMEE by RSK-175
Batch number: 162280013A

*- 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
Group Number: 1693021
Reported: 08/25/2016 15:22

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
8517614	80
8517614DL	84
Blank	100
LCS	107
LCSD	93
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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1693021 Sample # 8517585-619
Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify):
Sampler: EMW # of Coolers: 2

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOC (38 List)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron					(5) Remarks/Comments
E-13-0816	8/4/16	0750	H2O	3	X												
BOP-09i-0816	8/8/16	0855	H2O	3	X												
BOP-10i-0816	8/8/16	0925	H2O	3	X												
BOP-48i-0816	8/8/16	0935	H2O	3	X												
BOP-56i-0816	8/8/16	0905	H2O	3	X												
BOP-59i-0816	8/8/16	0915	H2O	3	X												
BOP-78i-0816	8/8/16	1025	H2O	3	X												
BOP-79i-0816	8/8/16	1030	H2O	3	X												
BOP-84i-0816	8/8/16	1045	H2O	3	X												
BOP-85i-0816	8/9/16	1010	H2O	3	X												
BOP-86i-0816	8/8/16	1000	H2O	3	X												
BOP-87i-0816	8/8/16	1015	H2O	3	X												
BOP-x-0816	8/8/16	0800	H2O	3	X												
Trip Blanks	—	—	H2O	2	X												
BOP-72i-0816	8/9/16	0925	H2O	12	X	X	X	X	X	X	X	X					

(4) Analyses Requested

(5) Remarks/Comments

(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	8/9/16 1640		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 8/10/16 0900

Relinquished by commercial carrier (circle): (UPS) FedEx Other: _____
Temperature upon Receipt: 0.5 °C
Custody Seals Intact?: (Yes) No

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Boeing Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 13419

For Eurofins Lancaster Laboratories use only
Group # 169302 Sample # 8517585-619
Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): _____
Sampler: EMW # of Coolers: 2

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 list)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron	(5) Remarks/Comments
BOP-75i-0816	8/9/16	1010	H2O	12	X	X	X	X	X	X	X	X	
BOP-76i-0816	8/9/16	1050	H2O	12	X	X	X	X	X	X	X	X	
BOP-73i-0816	8/9/16	1130	H2O	12	X	X	X	X	X	X	X	X	
BOP-77i-0816	8/9/16	1310	H2O	12	X	X	X	X	X	X	X	X	
BOP-74i-0816	8/9/16	1415 EMW	H2O	12	X	X	X	X	X	X	X	X	
BOP-88i-0816	8/9/16	1520	H2O	12	X	X	X	X	X	X	X	X	

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(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	8/9/16 1640		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 8/10/16 0925

Relinquished by commercial carrier (circle): UPS FedEx Other: _____
Temperature upon Receipt: 0.5 °C 2.10
Custody Seals Intact?: (Yes) No

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.

Issued by Dept. 40 Management
7063.02

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 157657

Group Number(s): 1693021

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/10/2016 9:25
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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 Krista Abel (3058) at 09:51 on 08/10/2016

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	DT146	2.0	DT	Wet	Y	Bagged	N
2	DT146	0.8	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: August 26, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 08/11/2016
Group Number: 1693902
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-15-0816 Water	8521849
E-4-0816 Water	8521850
E-4-0816 Total Metals Water	8521851
E-4-0816 Dissolved Metals Water	8521852
E-2-0816 Water	8521853
E-2-0816 Total Metals Water	8521854
E-2-0816 Dissolved Metals Water	8521855
E-3-0816 Water	8521856
E-3-0816 Total Metals Water	8521857
E-3-0816 Dissolved Metals Water	8521858
E-16-0816 Water	8521859
E-12-0816 Water	8521860
DP1-0816 Water	8521861
Trip Blank Water	8521862

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1693902

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8521856, 8521862

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample #s: 8521850

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8521849, 8521859, 8521860

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
Acetone	-29
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

Sample #s: 8521861

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial # 1 are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria) in Trial #1 and Trial #2. The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial #2 are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

Batch #: H162281AA (Sample number(s): 8521856, 8521862)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: 1,1-Dichloroethene, 112Trichloro122Trifluoroethane

Batch #: H162291AA (Sample number(s): 8521861 UNSPK: P521864)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: 112Trichloro122Trifluoroethane

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: 1,1-Dichloroethene, 112Trichloro122Trifluoroethane

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: 2-Butanone

Batch #: H162301AA (Sample number(s): 8521849, 8521853, 8521859-8521860)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 4-Methyl-2-pentanone, 2-Hexanone

RSKSOP-175 modified, GC Miscellaneous

Batch #: 162250009A (Sample number(s): 8521849-8521850, 8521853, 8521856, 8521859 UNSPK: P522377)

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

SW-846 6010C, Metals

Batch #: 162280635001 (Sample number(s): 8521851, 8521854 UNSPK: 8521854 BKG: 8521854)

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

Batch #: 162280635003 (Sample number(s): 8521857-8521858 UNSPK: P519111 BKG: P519111)

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

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

SW-846 6010C, Metals Dissolved

Batch #: 162280635002 (Sample number(s): 8521852, 8521855 UNSPK: 8521855 BKG: 8521855)

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

Batch #: 162280635003 (Sample number(s): 8521857-8521858 UNSPK: P519111 BKG: P519111)

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

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

SM 5310 C-2000, Wet Chemistry

Batch #: 16238298705A (Sample number(s): 8521850, 8521853, 8521856, 8521859 UNSPK: 8521850 BKG: 8521850)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

Sample Description: E-15-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521849
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:20 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPE15

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.5**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
Acetone	-29
2-Butanone	-32
4-Methyl-2-Pentanone	-34

Sample Description: E-15-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521849
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:20 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPE15

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-Hexanone -36					
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone					
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	**7,700**	**E**	5.0	1
	Trial ID: DL					
07105	Acetylene	74-86-2	250	U	250	50
07105	Ethane	74-84-0	250	U	250	50
07105	Ethene	74-85-1	250	U	250	50
07105	**Methane**	74-82-8	**10,000**		250	50
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**1.3**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.7**		1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 17:41	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 17:41	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 14:24	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 13:13	Johanna C Kennedy	50
00368	Nitrate Nitrogen	EPA 300.0	1	16224972151B	08/11/2016 21:58	Alexandria M Lanager	1

Sample Description: E-15-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521849
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:20 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPE15

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16224972151B	08/11/2016 21:58	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16238298704B	08/26/2016 04:02	Clinton M Wilson	1

Sample Description: E-4-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521850
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BP-E4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.9**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.8**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**0.5**		0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**21**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: E-4-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521850
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BP-E4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
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	**30**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**1.0**		0.10	1
00228	**Sulfate**	14808-79-8	**7.6**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162352AA	08/23/2016 00:16	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162352AA	08/23/2016 00:16	Matthew S Krause	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 14:44	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16224972151B	08/11/2016 20:04	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16224972151B	08/11/2016 20:04	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16238298705A	08/26/2016 04:16	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16229133301A	08/16/2016 10:48	Tyler W Wise	1

Sample Description: E-4-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521851
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162280635001	08/18/2016 19:27	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162280635001	08/17/2016 21:45	Annamaria Kuhns	1

Sample Description: E-4-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521852
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162280635002	08/18/2016 16:42	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162280635002	08/17/2016 21:45	Annamaria Kuhns	1

Sample Description: E-2-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521853
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:55 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BP-E2

CAT No.	Analysis Name	CAS Number	Result			Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**			**ug/l**	
11996	Acetone	67-64-1	5.0	U		5.0	1
11996	Benzene	71-43-2	0.2	U		0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U		0.5	1
11996	Bromoform	75-25-2	0.5	U		0.5	1
11996	Bromomethane	74-83-9	0.5	U		0.5	1
11996	2-Butanone	78-93-3	5.0	U		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U		0.2	1
11996	Chlorobenzene	108-90-7	0.5	U		0.5	1
11996	Chloroethane	75-00-3	0.5	U		0.5	1
11996	Chloroform	67-66-3	0.2	U		0.2	1
11996	Chloromethane	74-87-3	0.5	U		0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U		0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U		0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.4**			0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.5**			0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U		0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U		0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U		0.2	1
11996	Ethylbenzene	100-41-4	0.5	U		0.5	1
11996	2-Hexanone	591-78-6	5.0	U		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U		5.0	1
11996	Methylene Chloride	75-09-2	0.5	U		0.5	1
11996	Styrene	100-42-5	0.5	U		0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U		0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**			0.2	1
11996	Toluene	108-88-3	0.2	U		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U		0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U		0.2	1
11996	**Trichloroethene**	79-01-6	**1.8**			0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U		0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U		0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.6**			0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U		0.5	1
11996	o-Xylene	95-47-6	0.5	U		0.5	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	**8.5**			5.0	1
07105	Ethene	74-85-1	5.0		U	5.0	1
07105	**Methane**	74-82-8	**28,000**		**E**	5.0	1
Trial ID: DL							
07105	Acetylene	74-86-2	1,000		U	1,000	200
07105	Ethane	74-84-0	1,000		U	1,000	200
07105	Ethene	74-85-1	1,000		U	1,000	200

Sample Description: E-2-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521853
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:55 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BP-E2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**27,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**5.3**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.1**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 18:01	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 18:01	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 15:04	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/16/2016 10:32	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16224972151B	08/11/2016 22:26	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16224972151B	08/11/2016 22:26	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16238298705A	08/26/2016 04:54	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16229133301A	08/16/2016 10:48	Tyler W Wise	1

Sample Description: E-2-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521854
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:55 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**10.3**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162280635001	08/18/2016 17:52	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162280635001	08/17/2016 21:45	Annamaria Kuhns	1

Sample Description: E-2-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521855
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:55 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**8.43**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162280635002	08/18/2016 15:09	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162280635002	08/17/2016 21:45	Annamaria Kuhns	1

Sample Description: E-3-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521856
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BP-E3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**5.1**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	Acetylene	74-86-2	5.0	U	5.0	1

Sample Description: E-3-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521856
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BP-E3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		ug/l		ug/l	
07105	**Ethane**	74-84-0	**9.3**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**31,000**	**E**	5.0	1
	Trial ID: DL					
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**38,000**		1,000	200
Wet Chemistry	**EPA 300.0**		mg/l		mg/l	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**1.5**		1.0	1
	SM 5310 C-2000		mg/l		mg/l	
00273	**Total Organic Carbon**	n.a.	**1.6**		1.0	1
	EPA 376.1		mg/l		mg/l	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162281AA	08/15/2016 17:13	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162281AA	08/15/2016 17:13	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/12/2016 15:23	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162250009A	08/15/2016 15:31	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16224972151B	08/11/2016 22:55	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16224972151B	08/11/2016 22:55	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16238298705A	08/26/2016 05:07	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16229133301A	08/16/2016 10:48	Tyler W Wise	1

Sample Description: E-3-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521857
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**14.1**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162280635003	08/18/2016 18:14	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162280635003	08/17/2016 22:07	James L Mertz	1

Sample Description: E-3-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521858
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**10.1**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162280635003	08/18/2016 18:17	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162280635003	08/17/2016 22:07	James L Mertz	1

Sample Description: E-16-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521859
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:05 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPE16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.8**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
Acetone	-29
2-Butanone	-32
4-Methyl-2-Pentanone	-34

Sample Description: E-16-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521859
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 14:05 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPE16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-Hexanone -36					
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone					
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	**8.8**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**3.2**		1.0	10
00228	**Sulfate**	14808-79-8	**7.3**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 18:21	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 18:21	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162250009A	08/15/2016 10:58	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16224972151B	08/12/2016 00:06	Alexandria M Lanager	10
00228	Sulfate	EPA 300.0	1	16224972151B	08/11/2016 23:52	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16238298705A	08/26/2016 05:19	Clinton M Wilson	1

Sample Description: E-12-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521860
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPE12

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.1**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.6**		0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**17**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
Acetone	-29
2-Butanone	-32
4-Methyl-2-Pentanone	-34

Sample Description: E-12-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521860
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPE12

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-Hexanone		-36		

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 18:42	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 18:42	Kerri E Legerlotz	1

Sample Description: DP1-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521861
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:45 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPDP1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**68**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.7**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**11**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**21**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: DP1-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521861
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:45 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPDP1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**74**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**12**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**22**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial # 1 are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria) in Trial #1 and Trial #2. The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial #2 are:

Analyte	Response (%Drift)
2-Butanone	-27

Sample Description: DP1-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521861
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016 15:45 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPDP1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	4-Methyl-2-Pentanone -30				
	2-Hexanone -32				

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162352AA	08/23/2016 00:36	Matthew S Krause	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162291AA	08/16/2016 18:37	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162352AA	08/23/2016 00:36	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162291AA	08/16/2016 18:37	Kerri E Legerlotz	10

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521862
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016

The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPTB1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8521862
LL Group # 1693902
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/10/2016

The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/26/2016 12:47

BPTB1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162281AA	08/15/2016 14:30	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162281AA	08/15/2016 14:30	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:47

Group Number: 1693902

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: H162281AA	Sample number(s): 8521856,8521862		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162291AA	Sample number(s): 8521861		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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 12:47

Group Number: 1693902

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162301AA	Sample number(s): 8521849,8521853,8521859-8521860		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5

*- 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 12:47

Group Number: 1693902

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162352AA	Sample number(s): 8521850,8521861		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0

*- 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 12:47

Group Number: 1693902

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 162250009A	Sample number(s): 8521849-8521850,8521853,8521856,8521859		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 162280635001	Sample number(s): 8521851,8521854		
Iron	0.400	U	0.400
Batch number: 162280635002	Sample number(s): 8521852,8521855		
Iron	0.400	U	0.400
Batch number: 162280635003	Sample number(s): 8521857-8521858		
Iron	0.400	U	0.400
Batch number: 16224972151B	Sample number(s): 8521849-8521850,8521853,8521856,8521859		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16238298704B	Sample number(s): 8521849		
Total Organic Carbon	1.0	U	1.0
Batch number: 16238298705A	Sample number(s): 8521850,8521853,8521856,8521859		
Total Organic Carbon	1.0	U	1.0
Batch number: 16229133301A	Sample number(s): 8521850,8521853,8521856		
Sulfide	2.0	U	2.0

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: H162281AA	Sample number(s): 8521856,8521862								

*- 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 12:47

Group Number: 1693902

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
Acetone	37.5	29.95	37.5	29.52	80	79	65-130	1	30
Benzene	5.00	5.61	5.00	5.33	112	107	80-120	5	30
Bromodichloromethane	5.00	5.45	5.00	5.21	109	104	80-120	5	30
Bromoform	5.00	5.01	5.00	4.82	100	96	62-128	4	30
Bromomethane	5.00	4.85	5.00	4.77	97	95	62-131	2	30
2-Butanone	37.5	29.92	37.5	30.16	80	80	66-135	1	30
Carbon Disulfide	5.00	5.91	5.00	5.57	118	111	65-120	6	30
Carbon Tetrachloride	5.00	5.79	5.00	5.49	116	110	79-124	5	30
Chlorobenzene	5.00	5.12	5.00	5.00	102	100	80-120	2	30
Chloroethane	5.00	4.76	5.00	4.56	95	91	63-125	4	30
Chloroform	5.00	5.38	5.00	5.18	108	104	80-120	4	30
Chloromethane	5.00	4.86	5.00	4.69	97	94	55-126	3	30
Dibromochloromethane	5.00	5.10	5.00	4.98	102	100	78-127	2	30
1,1-Dichloroethane	5.00	5.70	5.00	5.47	114	109	75-120	4	30
1,2-Dichloroethane	5.00	5.23	5.00	5.13	105	103	72-127	2	30
1,1-Dichloroethene	5.00	6.07	5.00	5.75	121*	115	76-120	5	30
cis-1,2-Dichloroethene	5.00	5.61	5.00	5.30	112	106	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.91	5.00	5.61	118	112	80-120	5	30
1,2-Dichloropropane	5.00	5.68	5.00	5.32	114	106	80-120	6	30
cis-1,3-Dichloropropene	5.00	5.27	5.00	5.05	105	101	80-124	4	30
trans-1,3-Dichloropropene	5.00	4.88	5.00	4.73	98	95	77-121	3	30
Ethylbenzene	5.00	5.07	5.00	4.93	101	99	80-120	3	30
2-Hexanone	25	18.97	25	18.88	76	76	73-128	0	30
4-Methyl-2-pentanone	25	19.44	25	19.39	78	78	71-129	0	30
Methylene Chloride	5.00	5.66	5.00	5.40	113	108	80-120	5	30
Styrene	5.00	5.11	5.00	4.93	102	99	80-120	4	30
1,1,2,2-Tetrachloroethane	5.00	4.75	5.00	4.75	95	95	75-123	0	30
Tetrachloroethene	5.00	5.12	5.00	4.92	102	98	80-120	4	30
Toluene	5.00	5.18	5.00	5.06	104	101	80-120	2	30
112Trichloro122Trifluoroethane	5.00	6.33	5.00	6.02	127*	120	75-120	5	30
1,1,1-Trichloroethane	5.00	5.53	5.00	5.28	111	106	79-120	5	30
1,1,2-Trichloroethane	5.00	5.17	5.00	4.98	103	100	80-120	4	30
Trichloroethene	5.00	5.63	5.00	5.35	113	107	80-120	5	30
Trichlorofluoromethane	5.00	5.40	5.00	5.12	108	102	71-131	5	30
Vinyl Acetate	12.5	12.18	12.5	12.11	97	97	63-122	1	30
Vinyl Chloride	5.00	4.99	5.00	4.76	100	95	62-128	5	30
m+p-Xylene	10	10.31	10	9.95	103	100	80-120	4	30
o-Xylene	5.00	5.03	5.00	4.89	101	98	80-120	3	30
Batch number: H162291AA	Sample number(s): 8521861								
Acetone	37.5	31.85			85		65-130		
Benzene	5.00	5.29			106		80-120		
Bromodichloromethane	5.00	5.17			103		80-120		
Bromoform	5.00	4.98			100		62-128		
Bromomethane	5.00	4.51			90		62-131		
2-Butanone	37.5	29.99			80		66-135		
Carbon Disulfide	5.00	5.51			110		65-120		
Carbon Tetrachloride	5.00	5.48			110		79-124		
Chlorobenzene	5.00	5.10			102		80-120		
Chloroethane	5.00	4.22			84		63-125		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
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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 12:47

Group Number: 1693902

LCS/LCSD (continued)

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
Chloroform	5.00	5.13			103		80-120		
Chloromethane	5.00	4.11			82		55-126		
Dibromochloromethane	5.00	4.99			100		78-127		
1,1-Dichloroethane	5.00	5.24			105		75-120		
1,2-Dichloroethane	5.00	4.73			95		72-127		
1,1-Dichloroethene	5.00	5.88			118		76-120		
cis-1,2-Dichloroethene	5.00	5.50			110		80-120		
trans-1,2-Dichloroethene	5.00	5.78			116		80-120		
1,2-Dichloropropane	5.00	5.17			103		80-120		
cis-1,3-Dichloropropene	5.00	4.99			100		80-124		
trans-1,3-Dichloropropene	5.00	4.59			92		77-121		
Ethylbenzene	5.00	4.93			99		80-120		
2-Hexanone	25	19.04			76		73-128		
4-Methyl-2-pentanone	25	19.28			77		71-129		
Methylene Chloride	5.00	5.46			109		80-120		
Styrene	5.00	5.00			100		80-120		
1,1,2,2-Tetrachloroethane	5.00	4.78			96		75-123		
Tetrachloroethene	5.00	5.09			102		80-120		
Toluene	5.00	5.07			101		80-120		
112Trichloro122Trifluoroethane	5.00	6.04			121*		75-120		
1,1,1-Trichloroethane	5.00	5.25			105		79-120		
1,1,2-Trichloroethane	5.00	5.04			101		80-120		
Trichloroethene	5.00	5.51			110		80-120		
Trichlorofluoromethane	5.00	5.11			102		71-131		
Vinyl Acetate	12.5	10.62	12.5	10.82	85	87	63-122	2	30
Vinyl Chloride	5.00	4.31			86		62-128		
m+p-Xylene	10	10.1			101		80-120		
o-Xylene	5.00	4.96			99		80-120		
Batch number: H162301AA	Sample number(s): 8521849,8521853,8521859-8521860								
Acetone	37.5	28.51	37.5	28.08	76	75	65-130	2	30
Benzene	5.00	5.12	5.00	4.87	102	97	80-120	5	30
Bromodichloromethane	5.00	4.97	5.00	4.73	99	95	80-120	5	30
Bromoform	5.00	5.01	5.00	4.65	100	93	62-128	7	30
Bromomethane	5.00	4.63	5.00	4.56	93	91	62-131	1	30
2-Butanone	37.5	26.62	37.5	26.71	71	71	66-135	0	30
Carbon Disulfide	5.00	5.27	5.00	4.99	105	100	65-120	5	30
Carbon Tetrachloride	5.00	5.48	5.00	5.07	110	101	79-124	8	30
Chlorobenzene	5.00	5.34	5.00	4.98	107	100	80-120	7	30
Chloroethane	5.00	4.26	5.00	4.10	85	82	63-125	4	30
Chloroform	5.00	4.91	5.00	4.63	98	93	80-120	6	30
Chloromethane	5.00	4.46	5.00	4.27	89	85	55-126	4	30
Dibromochloromethane	5.00	5.18	5.00	4.97	104	99	78-127	4	30
1,1-Dichloroethane	5.00	5.10	5.00	4.81	102	96	75-120	6	30
1,2-Dichloroethane	5.00	4.57	5.00	4.36	91	87	72-127	5	30
1,1-Dichloroethene	5.00	5.72	5.00	5.38	114	108	76-120	6	30
cis-1,2-Dichloroethene	5.00	5.37	5.00	5.04	107	101	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.52	5.00	5.27	110	105	80-120	5	30
1,2-Dichloropropane	5.00	4.96	5.00	4.73	99	95	80-120	5	30
cis-1,3-Dichloropropene	5.00	4.76	5.00	4.49	95	90	80-124	6	30

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:47

Group Number: 1693902

LCS/LCSD (continued)

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
trans-1,3-Dichloropropene	5.00	4.71	5.00	4.40	94	88	77-121	7	30
Ethylbenzene	5.00	5.14	5.00	4.80	103	96	80-120	7	30
2-Hexanone	25	16.94	25	16.68	68*	67*	73-128	2	30
4-Methyl-2-pentanone	25	16.95	25	16.73	68*	67*	71-129	1	30
Methylene Chloride	5.00	5.23	5.00	4.91	105	98	80-120	6	30
Styrene	5.00	5.19	5.00	4.85	104	97	80-120	7	30
1,1,2,2-Tetrachloroethane	5.00	4.74	5.00	4.63	95	93	75-123	2	30
Tetrachloroethene	5.00	5.40	5.00	5.01	108	100	80-120	8	30
Toluene	5.00	5.24	5.00	4.93	105	99	80-120	6	30
112Trichloro122Trifluoroethane	5.00	6.00	5.00	5.46	120	109	75-120	9	30
1,1,1-Trichloroethane	5.00	5.24	5.00	4.85	105	97	79-120	8	30
1,1,2-Trichloroethane	5.00	5.24	5.00	4.98	105	100	80-120	5	30
Trichloroethene	5.00	5.40	5.00	5.06	108	101	80-120	6	30
Trichlorofluoromethane	5.00	5.36	5.00	4.98	107	100	71-131	7	30
Vinyl Acetate	12.5	10.53	12.5	9.32	84	75	63-122	12	30
Vinyl Chloride	5.00	4.71	5.00	4.49	94	90	62-128	5	30
m+p-Xylene	10	10.49	10	9.87	105	99	80-120	6	30
o-Xylene	5.00	5.16	5.00	4.88	103	98	80-120	6	30
Batch number: H162352AA	Sample number(s): 8521850,8521861								
Acetone	37.5	27.9	37.5	31.82	74	85	65-130	13	30
Benzene	5.00	4.64	5.00	4.49	93	90	80-120	3	30
Bromodichloromethane	5.00	4.88	5.00	4.70	98	94	80-120	4	30
Bromoform	5.00	4.86	5.00	4.64	97	93	62-128	5	30
Bromomethane	5.00	4.55	5.00	4.40	91	88	62-131	3	30
2-Butanone	37.5	34.02	37.5	37.09	91	99	66-135	9	30
Carbon Disulfide	5.00	4.38	5.00	4.14	88	83	65-120	6	30
Carbon Tetrachloride	5.00	5.14	5.00	4.82	103	96	79-124	7	30
Chlorobenzene	5.00	4.69	5.00	4.49	94	90	80-120	4	30
Chloroethane	5.00	4.59	5.00	4.37	92	87	63-125	5	30
Chloroform	5.00	4.66	5.00	4.48	93	90	80-120	4	30
Chloromethane	5.00	4.40	5.00	4.07	88	81	55-126	8	30
Dibromochloromethane	5.00	4.92	5.00	4.68	98	94	78-127	5	30
1,1-Dichloroethane	5.00	4.74	5.00	4.58	95	92	75-120	3	30
1,2-Dichloroethane	5.00	4.63	5.00	4.53	93	91	72-127	2	30
1,1-Dichloroethene	5.00	4.71	5.00	4.50	94	90	76-120	5	30
cis-1,2-Dichloroethene	5.00	4.77	5.00	4.54	95	91	80-120	5	30
trans-1,2-Dichloroethene	5.00	4.79	5.00	4.64	96	93	80-120	3	30
1,2-Dichloropropane	5.00	4.70	5.00	4.55	94	91	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.67	5.00	4.43	93	89	80-124	5	30
trans-1,3-Dichloropropene	5.00	4.80	5.00	4.48	96	90	77-121	7	30
Ethylbenzene	5.00	4.62	5.00	4.42	92	88	80-120	5	30
2-Hexanone	25	23.51	25	24.66	94	99	73-128	5	30
4-Methyl-2-pentanone	25	23.86	25	25.05	95	100	71-129	5	30
Methylene Chloride	5.00	4.57	5.00	4.47	91	89	80-120	2	30
Styrene	5.00	4.80	5.00	4.55	96	91	80-120	5	30
1,1,2,2-Tetrachloroethane	5.00	4.58	5.00	4.38	92	88	75-123	5	30
Tetrachloroethene	5.00	4.60	5.00	4.35	92	87	80-120	6	30
Toluene	5.00	4.66	5.00	4.49	93	90	80-120	4	30

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

Client Name: The Boeing Company
Reported: 08/26/2016 12:47

Group Number: 1693902

LCS/LCSD (continued)

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					
112Trichloro122Trifluoroethane	5.00	4.69	5.00	4.41	94	88	75-120	6	30
1,1,1-Trichloroethane	5.00	4.85	5.00	4.51	97	90	79-120	7	30
1,1,2-Trichloroethane	5.00	4.64	5.00	4.51	93	90	80-120	3	30
Trichloroethene	5.00	4.68	5.00	4.55	94	91	80-120	3	30
Trichlorofluoromethane	5.00	4.92	5.00	4.62	98	92	71-131	6	30
Vinyl Acetate	12.5	10.31	12.5	10.22	82	82	63-122	1	30
Vinyl Chloride	5.00	4.58	5.00	4.31	92	86	62-128	6	30
m+p-Xylene	10	9.31	10	8.93	93	89	80-120	4	30
o-Xylene	5.00	4.64	5.00	4.42	93	88	80-120	5	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162250009A	Sample number(s): 8521849-8521850,8521853,8521856,8521859								
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: 162280635001	Sample number(s): 8521851,8521854								
Iron	1.00	0.998			100		80-120		
Batch number: 162280635002	Sample number(s): 8521852,8521855								
Iron	1.00	0.988			99		80-120		
Batch number: 162280635003	Sample number(s): 8521857-8521858								
Iron	1.00	0.983			98		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16224972151B	Sample number(s): 8521849-8521850,8521853,8521856,8521859								
Nitrate Nitrogen	0.750	0.761			102		90-110		
Sulfate	7.50	7.62			102		90-110		
Batch number: 16238298704B	Sample number(s): 8521849								
Total Organic Carbon	25	26.85			107		91-113		
Batch number: 16238298705A	Sample number(s): 8521850,8521853,8521856,8521859								
Total Organic Carbon	25	26.5			106		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16229133301A	Sample number(s): 8521850,8521853,8521856								
Sulfide	20	19.07	20	19.47	95	97	80-120	2	4

MS/MSD

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

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:47

Group Number: 1693902

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: H162291AA	Sample number(s): 8521861 UNSPK: P521864										
Acetone	33.25		37.5	60.98	37.5	61.58	74	76	65-130	1	30
Benzene	0.2	U	5.00	5.33	5.00	5.53	107	111	80-120	4	30
Bromodichloromethane	0.5	U	5.00	5.07	5.00	5.49	101	110	80-120	8	30
Bromoform	0.5	U	5.00	4.88	5.00	5.45	98	109	62-128	11	30
Bromomethane	0.5	U	5.00	4.64	5.00	4.90	93	98	62-131	6	30
2-Butanone	5.0	U	37.5	44.47	37.5	26.54	119	71	66-135	51*	30
Carbon Disulfide	0.5	U	5.00	5.84	5.00	5.87	117	117	65-120	0	30
Carbon Tetrachloride	0.2	U	5.00	5.73	5.00	6.03	115	121	79-124	5	30
Chlorobenzene	0.5	U	5.00	5.23	5.00	5.65	105	113	80-120	8	30
Chloroethane	0.5	U	5.00	4.46	5.00	4.66	89	93	63-125	4	30
Chloroform	0.2	U	5.00	5.09	5.00	5.33	102	107	80-120	5	30
Chloromethane	0.5	U	5.00	4.34	5.00	4.60	87	92	55-126	6	30
Dibromochloromethane	0.5	U	5.00	5.14	5.00	5.64	103	113	78-127	9	30
1,1-Dichloroethane	0.5	U	5.00	5.31	5.00	5.40	106	108	75-120	2	30
1,2-Dichloroethane	0.2	U	5.00	4.53	5.00	4.74	91	95	72-127	5	30
1,1-Dichloroethene	0.2	U	5.00	6.12	5.00	6.44	122*	129*	76-120	5	30
cis-1,2-Dichloroethene	0.2	U	5.00	5.54	5.00	5.69	111	114	80-120	3	30
trans-1,2-Dichloroethene	0.2	U	5.00	5.86	5.00	5.97	117	119	80-120	2	30
1,2-Dichloropropane	0.5	U	5.00	5.09	5.00	5.43	102	109	80-120	6	30
cis-1,3-Dichloropropene	0.2	U	5.00	4.75	5.00	5.21	95	104	80-124	9	30
trans-1,3-Dichloropropene	0.2	U	5.00	4.53	5.00	4.97	91	99	77-121	9	30
Ethylbenzene	0.5	U	5.00	5.18	5.00	5.54	104	111	80-120	7	30
2-Hexanone	5.0	U	25	18.45	25	19.63	74	79	73-128	6	30
4-Methyl-2-pentanone	5.0	U	25	18.39	25	19.73	74	79	71-129	7	30
Methylene Chloride	0.5	U	5.00	5.26	5.00	5.36	105	107	80-120	2	30
Styrene	0.5	U	5.00	5.08	5.00	5.54	102	111	80-120	9	30
1,1,2,2-Tetrachloroethane	0.2	U	5.00	4.73	5.00	5.11	95	102	75-123	8	30
Tetrachloroethene	0.2	U	5.00	5.56	5.00	5.79	111	116	80-120	4	30
Toluene	0.2	U	5.00	5.31	5.00	5.68	106	114	80-120	7	30
112Trichloro122Trifluoroethane	0.5	U	5.00	6.53	5.00	6.60	131*	132*	75-120	1	30
1,1,1-Trichloroethane	0.5	U	5.00	5.46	5.00	5.67	109	113	79-120	4	30
1,1,2-Trichloroethane	0.2	U	5.00	5.03	5.00	5.61	101	112	80-120	11	30
Trichloroethene	0.201		5.00	5.78	5.00	6.09	112	118	80-120	5	30
Trichlorofluoromethane	0.5	U	5.00	5.50	5.00	5.97	110	119	71-131	8	30
Vinyl Chloride	0.2	U	5.00	4.71	5.00	5.01	94	100	62-128	6	30
m+p-Xylene	0.5	U	10	10.56	10	11.2	106	112	80-120	6	30
o-Xylene	0.5	U	5.00	5.09	5.00	5.48	102	110	80-120	8	30
	ug/l		ug/l	ug/l	ug/l	ug/l					
Batch number: 162250009A	Sample number(s): 8521849-8521850,8521853,8521856,8521859 UNSPK: P522377										
Acetylene	5.0	U	51.2	45.92	51.2	49.76	90	97	61-148	8	20
Ethane	5.0	U	59.2	55.63	59.2	57.65	94	97	74-131	4	30
Ethene	5.0	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
	mg/l		mg/l	mg/l	mg/l	mg/l					

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/26/2016 12:47

Group Number: 1693902

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: 162280635001	Sample number(s): 8521851,8521854 UNSPK: 8521854									
Iron	10.34	1.00	10.97	1.00	11.2	63 (2)	87 (2)	75-125	2	20
Batch number: 162280635002	Sample number(s): 8521852,8521855 UNSPK: 8521855									
Iron	8.43	1.00	9.15	1.00	9.15	73 (2)	73 (2)	75-125	0	20
Batch number: 162280635003	Sample number(s): 8521857-8521858 UNSPK: P519111									
Iron	6.72	1.00	8.01	1.00	7.99	129 (2)	128 (2)	75-125	0	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16224972151B	Sample number(s): 8521849-8521850,8521853,8521856,8521859 UNSPK: 8521850									
Nitrate Nitrogen	1.01	1.00	1.97			96		90-110		
Sulfate	7.61	10	17.82			102		90-110		
Batch number: 16238298704B	Sample number(s): 8521849 UNSPK: P524226									
Total Organic Carbon	3.13	10	14.03			109		91-113		
Batch number: 16238298705A	Sample number(s): 8521850,8521853,8521856,8521859 UNSPK: 8521850									
Total Organic Carbon	1.0 U	10	11.57			116*		91-113		

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: 162280635001	Sample number(s): 8521851,8521854 BKG: 8521854			
Iron	10.34	10.46	1	20
Batch number: 162280635002	Sample number(s): 8521852,8521855 BKG: 8521855			
Iron	8.43	8.29	2	20
Batch number: 162280635003	Sample number(s): 8521857-8521858 BKG: P519111			
Iron	6.72	5.22	25*	20
	mg/l	mg/l		
Batch number: 16224972151B	Sample number(s): 8521849-8521850,8521853,8521856,8521859 BKG: 8521850			
Nitrate Nitrogen	1.01	1.02	1	15
Sulfate	7.61	7.68	1	15
Batch number: 16238298704B	Sample number(s): 8521849 BKG: P524226			
Total Organic Carbon	3.13	3.02	3 (1)	3
Batch number: 16238298705A	Sample number(s): 8521850,8521853,8521856,8521859 BKG: 8521850			
Total Organic Carbon	1.0 U	1.0 U	0 (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: 08/26/2016 12:47

Group Number: 1693902

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: 16229133301A	Sample number(s): 8521850,8521853,8521856 BKG: P523752			
Sulfide	6.61	6.50	2 (1)	20

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 Boeing 38
Batch number: H162281AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8521856	102	103	98	101
8521862	105	109	97	100
Blank	102	106	98	98
LCS	107	104	95	101
LCSD	104	102	96	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162291AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8521861DL	100	98	100	95
Blank	101	102	97	96
LCS	104	100	96	96
LCSD	101	101	97	97
MS	102	101	98	97
MSD	100	103	97	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162301AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8521849	102	101	98	94
8521853	99	103	99	96
8521859	101	99	99	94
8521860	98	95	100	93
Blank	103	100	96	95
LCS	100	102	99	97
LCSD	101	100	99	96
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162352AA

*- 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 12:47

Group Number: 1693902

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.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8521850	105	109	96	101
8521861	102	101	98	99
Blank	103	104	98	100
LCS	102	103	99	100
LCSD	103	101	99	102
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 162250009A

	Propene
8521849	80
8521849DL	103
8521850	96
8521853	90
8521853DL	92
8521856	100
8521856DL	102
8521859	92
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.

Boeing Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1649362 Sample # 652184 19-62

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): ____
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOC (38 list)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron					(5) Remarks/Comments
E-15-0816	8/10/16	1420	H2O	9	X	X	X	X	X	X							No Sulfide @ E-15-0816
E-4-0816	8/10/16	1435	H2O	12	X	X	X	X	X	X	X	X					
E-2-0816	8/10/16	1455	H2O	15	X	X	X	X	X	X	X	X					Metals QC @ E-2-0816
E-3-0816	8/10/16	1515	H2O	12	X	X	X	X	X	X	X	X					
E-16-0816	8/10/16	1405	H2O	9	X	X	X		X	X							
E-12-0816	8/10/16	1535	H2O	3	X												
DP1-0816	8/10/16	1545	H2O	3	X												
Trip Blank	—	—	H2O	2	X												

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: ____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
E Waikel	8/10/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 8.11.16 950

Relinquished by commercial carrier (circle): UPS FedEx Other: ____

Temperature upon Receipt: 2.7 °C

Custody Seals Intact?: Yes No

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.

Issued by Dept. 40 Management

7063.02

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 157903

Group Number(s): 169362

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/11/2016 9:50
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 10:23 on 08/11/2016

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	2.7	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: August 29, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 08/12/2016
Group Number: 1694313
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-83i-0816 Water	8523564
BOP-83i-0816 Total Metals Water	8523565
BOP-83i-0816 Dissolved Metals Water	8523566
BOP-82i-0816 Water	8523567
BOP-82i-0816 Total Metals Water	8523568
BOP-82i-0816 Dissolved Metals Water	8523569
BOP-80i-0816 Water	8523570
BOP-80i-0816 Total Metals Water	8523571
BOP-80i-0816 Dissolved Metals Water	8523572
BOP-07i-0816 Water	8523573
BOP-16i-0816 Water	8523574
BOP-16i-0816 Total Metals Water	8523575
BOP-16i-0816 Dissolved Metals Water	8523576
BOP-81i-0816 Water	8523577
BOP-81i-0816 Total Metals Water	8523578
BOP-81i-0816 Dissolved Metals Water	8523579
BOP-W-0816 Water	8523580
Trip Blank Water	8523581

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1694313

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8523564, 8523567

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8523580

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8523570

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-29

Sample #s: 8523574

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
Acetone	-29
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

Sample #s: 8523573

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial #1 are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria) in Trial #1 and Trial #2. The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial #2 are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
Acetone	-29
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes in Trial #2 are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

Sample #s: 8523577, 8523581

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-23
4-methyl-2-pentanone	-25
2-hexanone	-28

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Batch #: H162291AA (Sample number(s): 8523564, 8523567 UNSPK: P521864)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias:
112Trichloro122Trifluoroethane

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: 1,1-Dichloroethene, 112Trichloro122Trifluoroethane

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: 2-Butanone

Batch #: H162301AA (Sample number(s): 8523570, 8523573-8523574)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 4-Methyl-2-pentanone, 2-Hexanone

Batch #: H162322AA (Sample number(s): 8523577, 8523581)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias:
112Trichloro122Trifluoroethane

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 2-Hexanone

SM 5310 C-2000, Wet Chemistry

Batch #: 16240298703B (Sample number(s): 8523574, 8523577 UNSPK: 8523574 BKG: 8523574)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Sample Description: BOP-83i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523564
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT83I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**46**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-83i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523564
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT83I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
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	**6.9**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**3.3**		1.0	10
00228	**Sulfate**	14808-79-8	**9.1**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 19:38	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 19:38	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162280013A	08/16/2016 10:11	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16225667131A	08/13/2016 05:14	Drew M Gerhart	10
00228	Sulfate	EPA 300.0	1	16225667131A	08/12/2016 19:35	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16240298703A	08/26/2016 20:38	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16229133301A	08/16/2016 10:48	Tyler W Wise	1

Sample Description: BOP-83i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523565
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**4.33**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:07	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-83i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523566
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.440**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:10	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-82i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523567
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:35

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT82I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**42**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.7**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of

Sample Description: BOP-82i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523567
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:35

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT82I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
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	**900**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	25	U	25	5
07105	Ethane	74-84-0	25	U	25	5
07105	Ethene	74-85-1	25	U	25	5
07105	**Methane**	74-82-8	**1,000**		25	5
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.40**		0.10	1
00228	**Sulfate**	14808-79-8	**13.4**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.3**		1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 19:58	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 19:58	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162280013A	08/15/2016 11:53	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162280013A	08/16/2016 10:52	Johanna C Kennedy	5
00368	Nitrate Nitrogen	EPA 300.0	1	16225667131A	08/12/2016 19:50	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16225667131A	08/12/2016 19:50	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16240298703A	08/26/2016 20:51	Clinton M Wilson	1

Sample Description: BOP-82i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523568
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:35

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**13.6**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:20	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-82i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523569
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 09:35

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**1.13**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:24	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-80i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523570
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 11:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT80I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**32**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.7**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.2**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.7**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

Sample Description: BOP-80i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523570
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 11:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT80I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone					
	The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. The affected analyte(s) and response(s) are:					
	Analyte: Acetone; Response (%Drift): -29					
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	**9.0**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**17,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**21,000**		500	100
Wet Chemistry	**EPA 300.0**		mg/l		mg/l	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	Sulfate	14808-79-8	1.0	U	1.0	1
	SM 5310 C-2000		mg/l		mg/l	
00273	**Total Organic Carbon**	n.a.	**2.5**		1.0	1
	EPA 376.1		mg/l		mg/l	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

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

Sample Description: BOP-80i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523570
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 11:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT80I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 19:22	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 19:22	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162280013A	08/15/2016 12:08	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162280013A	08/16/2016 11:07	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16225667131A	08/12/2016 20:05	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16225667131A	08/12/2016 20:05	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16240298703A	08/26/2016 21:05	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16229133301A	08/16/2016 10:48	Tyler W Wise	1

Sample Description: BOP-80i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523571
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 11:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**12.1**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:27	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-80i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523572
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 11:05

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**10.9**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:31	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-07i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523573
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 13:00

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT07I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	10	U	10	2
11996	Benzene	71-43-2	0.4	U	0.4	2
11996	Bromodichloromethane	75-27-4	1.0	U	1.0	2
11996	Bromoform	75-25-2	1.0	U	1.0	2
11996	Bromomethane	74-83-9	1.0	U	1.0	2
11996	2-Butanone	78-93-3	10	U	10	2
11996	Carbon Disulfide	75-15-0	1.0	U	1.0	2
11996	Carbon Tetrachloride	56-23-5	0.4	U	0.4	2
11996	Chlorobenzene	108-90-7	1.0	U	1.0	2
11996	Chloroethane	75-00-3	1.0	U	1.0	2
11996	Chloroform	67-66-3	0.4	U	0.4	2
11996	Chloromethane	74-87-3	1.0	U	1.0	2
11996	Dibromochloromethane	124-48-1	1.0	U	1.0	2
11996	1,1-Dichloroethane	75-34-3	1.0	U	1.0	2
11996	1,2-Dichloroethane	107-06-2	0.4	U	0.4	2
11996	**1,1-Dichloroethene**	75-35-4	**12**		0.4	2
11996	**cis-1,2-Dichloroethene**	156-59-2	**14**		0.4	2
11996	trans-1,2-Dichloroethene	156-60-5	0.4	U	0.4	2
11996	1,2-Dichloropropane	78-87-5	1.0	U	1.0	2
11996	cis-1,3-Dichloropropene	10061-01-5	0.4	U	0.4	2
11996	trans-1,3-Dichloropropene	10061-02-6	0.4	U	0.4	2
11996	Ethylbenzene	100-41-4	1.0	U	1.0	2
11996	2-Hexanone	591-78-6	10	U	10	2
11996	4-Methyl-2-pentanone	108-10-1	10	U	10	2
11996	Methylene Chloride	75-09-2	1.0	U	1.0	2
11996	Styrene	100-42-5	1.0	U	1.0	2
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.4	U	0.4	2
11996	**Tetrachloroethene**	127-18-4	**3.2**		0.4	2
11996	Toluene	108-88-3	0.4	U	0.4	2
11996	**112Trichloro122Trifluoroethane**	76-13-1	**1.6**		1.0	2
11996	**1,1,1-Trichloroethane**	71-55-6	**1.9**		1.0	2
11996	1,1,2-Trichloroethane	79-00-5	0.4	U	0.4	2
11996	**Trichloroethene**	79-01-6	**160**	**E**	0.4	2
11996	Trichlorofluoromethane	75-69-4	1.0	U	1.0	2
11996	Vinyl Acetate	108-05-4	1.0	U	1.0	2
11996	Vinyl Chloride	75-01-4	0.4	U	0.4	2
11996	m+p-Xylene	179601-23-1	1.0	U	1.0	2
11996	o-Xylene	95-47-6	1.0	U	1.0	2
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-07i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523573
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 13:00

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT07I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**12**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**13**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**3.0**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**160**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial #1 are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria) in Trial #1 and Trial #2. The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) in Trial #2 are:

Sample Description: BOP-07i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523573
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 13:00

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT07I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	Analyte	Response (%Drift)				
	Chloromethane	-21				
	Chloroethane	-24				
	Acetone	-29				
	2-Butanone	-32				
	4-Methyl-2-Pentanone	-34				
	2-Hexanone	-36				

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes in Trial #2 are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

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	**3,600**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	20
07105	Ethane	74-84-0	100	U	100	20
07105	Ethene	74-85-1	100	U	100	20
07105	**Methane**	74-82-8	**5,300**		100	20
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**1.1**		0.10	1
00228	**Sulfate**	14808-79-8	**8.0**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162352AA	08/23/2016 01:37	Matthew S Krause	2
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162301AA	08/17/2016 20:03	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162352AA	08/23/2016 01:37	Matthew S Krause	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162301AA	08/17/2016 20:03	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162280013A	08/15/2016 12:23	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162280013A	08/16/2016 11:23	Johanna C Kennedy	20
00368	Nitrate Nitrogen	EPA 300.0	1	16225667131A	08/12/2016 20:20	Drew M Gerhart	1

Sample Description: BOP-07i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523573
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 13:00

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT07I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	16225667131A	08/12/2016 20:20	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16240298703A	08/26/2016 21:18	Clinton M Wilson	1

Sample Description: BOP-16i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523574
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:10

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT16I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**5.0**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.9**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
Acetone	-29
2-Butanone	-32
4-Methyl-2-Pentanone	-34

Sample Description: BOP-16i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523574
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:10

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT16I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-Hexanone -36					

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

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	**1,100**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50	U	50	10
07105	Ethane	74-84-0	50	U	50	10
07105	Ethene	74-85-1	50	U	50	10
07105	**Methane**	74-82-8	**1,400**		50	10
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.14**		0.10	1
00228	**Sulfate**	14808-79-8	**7.7**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 19:43	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 19:43	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162280013A	08/15/2016 12:39	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162280013A	08/16/2016 11:38	Johanna C Kennedy	10

Sample Description: BOP-16i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523574
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:10

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT16I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00368	Nitrate Nitrogen	EPA 300.0	1	16225667131A	08/12/2016 20:34	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16225667131A	08/12/2016 20:34	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16240298703B	08/26/2016 21:31	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16231133301A	08/18/2016 11:01	Tyler W Wise	1

Sample Description: BOP-16i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523575
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:10

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:34	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-16i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523576
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:10

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:38	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-81i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523577
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 10:30

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT81I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**76**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-23
4-methyl-2-pentanone	-25
2-hexanone	-28

Sample Description: BOP-81i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523577
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 10:30

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT81I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.					
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	**17,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**22,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	Sulfate	14808-79-8	1.0	U	1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.1**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162322AA	08/19/2016 13:14	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162322AA	08/19/2016 13:14	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162280013A	08/15/2016 12:55	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162280013A	08/16/2016 11:54	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16225667131A	08/12/2016 21:19	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16225667131A	08/12/2016 21:19	Drew M Gerhart	1

Sample Description: BOP-81i-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523577
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 10:30

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT81I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00273	Total Organic Carbon	SM 5310 C-2000	1	16240298703B	08/26/2016 22:10	Clinton M Wilson	1
01333	Sulfide	EPA 376.1	1	16231133301A	08/18/2016 11:01	Tyler W Wise	1

Sample Description: BOP-81i-0816 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523578
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 10:30

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**12.3**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 17:41	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-81i-0816 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523579
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 10:30

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**8.98**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	162310635003	08/23/2016 16:04	Suzanne M Will	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	162310635003	08/19/2016 22:35	Lisa J Cooke	1

Sample Description: BOP-W-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523580
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:00

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT--W

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**9.9**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**11**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**1.3**		0.5	1
11996	**1,1,1-Trichloroethane**	71-55-6	**1.6**		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**130**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: BOP-W-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523580
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:00

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT--W

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**9.6**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**13**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**2.8**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**140**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

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

Sample Description: BOP-W-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523580
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016 12:00

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT--W

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162352AA	08/22/2016 23:56	Matthew S Krause	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162352AA	08/23/2016 00:57	Matthew S Krause	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162352AA	08/22/2016 23:56	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162352AA	08/23/2016 00:57	Matthew S Krause	10

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523581
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT-TB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-23
4-methyl-2-pentanone	-25
2-hexanone	-28

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8523581
LL Group # 1694313
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/11/2016

The Boeing Company

Submitted: 08/12/2016 10:00
Reported: 08/29/2016 08:47

PT-TB

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162322AA	08/19/2016 12:34	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162322AA	08/19/2016 12:34	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/29/2016 08:47

Group Number: 1694313

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: H162291AA	Sample number(s): 8523564,8523567		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162301AA	Sample number(s): 8523570,8523573-8523574		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 08/29/2016 08:47

Group Number: 1694313

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162322AA	Sample number(s): 8523577,8523581		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5

*- 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.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/29/2016 08:47

Group Number: 1694313

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162352AA	Sample number(s): 8523573,8523580		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0

*- Outside of specification
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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/29/2016 08:47

Group Number: 1694313

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 162280013A	Sample number(s): 8523564,8523567,8523570,8523573-8523574,8523577		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 162310635003	Sample number(s): 8523565-8523566,8523568-8523569,8523571-8523572,8523575-8523576,8523578-8523579		
Iron	0.400	U	0.400
Batch number: 16225667131A	Sample number(s): 8523564,8523567,8523570,8523573-8523574,8523577		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16240298703A	Sample number(s): 8523564,8523567,8523570,8523573		
Total Organic Carbon	1.0	U	1.0
Batch number: 16240298703B	Sample number(s): 8523574,8523577		
Total Organic Carbon	1.0	U	1.0
Batch number: 16229133301A	Sample number(s): 8523564,8523570		
Sulfide	2.0	U	2.0
Batch number: 16231133301A	Sample number(s): 8523574,8523577		
Sulfide	2.0	U	2.0

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: H162291AA	Sample number(s): 8523564,8523567								
Acetone	37.5	31.85			85		65-130		

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Quality Control Summary

Client Name: The Boeing Company
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LCS/LCSD (continued)

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
Benzene	5.00	5.29			106		80-120		
Bromodichloromethane	5.00	5.17			103		80-120		
Bromoform	5.00	4.98			100		62-128		
Bromomethane	5.00	4.51			90		62-131		
2-Butanone	37.5	29.99			80		66-135		
Carbon Disulfide	5.00	5.51			110		65-120		
Carbon Tetrachloride	5.00	5.48			110		79-124		
Chlorobenzene	5.00	5.10			102		80-120		
Chloroethane	5.00	4.22			84		63-125		
Chloroform	5.00	5.13			103		80-120		
Chloromethane	5.00	4.11			82		55-126		
Dibromochloromethane	5.00	4.99			100		78-127		
1,1-Dichloroethane	5.00	5.24			105		75-120		
1,2-Dichloroethane	5.00	4.73			95		72-127		
1,1-Dichloroethene	5.00	5.88			118		76-120		
cis-1,2-Dichloroethene	5.00	5.50			110		80-120		
trans-1,2-Dichloroethene	5.00	5.78			116		80-120		
1,2-Dichloropropane	5.00	5.17			103		80-120		
cis-1,3-Dichloropropene	5.00	4.99			100		80-124		
trans-1,3-Dichloropropene	5.00	4.59			92		77-121		
Ethylbenzene	5.00	4.93			99		80-120		
2-Hexanone	25	19.04			76		73-128		
4-Methyl-2-pentanone	25	19.28			77		71-129		
Methylene Chloride	5.00	5.46			109		80-120		
Styrene	5.00	5.00			100		80-120		
1,1,2,2-Tetrachloroethane	5.00	4.78			96		75-123		
Tetrachloroethene	5.00	5.09			102		80-120		
Toluene	5.00	5.07			101		80-120		
112Trichloro122Trifluoroethane	5.00	6.04			121*		75-120		
1,1,1-Trichloroethane	5.00	5.25			105		79-120		
1,1,2-Trichloroethane	5.00	5.04			101		80-120		
Trichloroethene	5.00	5.51			110		80-120		
Trichlorofluoromethane	5.00	5.11			102		71-131		
Vinyl Acetate	12.5	10.62	12.5	10.82	85	87	63-122	2	30
Vinyl Chloride	5.00	4.31			86		62-128		
m+p-Xylene	10	10.1			101		80-120		
o-Xylene	5.00	4.96			99		80-120		
Batch number: H162301AA	Sample number(s): 8523570,8523573-8523574								
Acetone	37.5	28.51	37.5	28.08	76	75	65-130	2	30
Benzene	5.00	5.12	5.00	4.87	102	97	80-120	5	30
Bromodichloromethane	5.00	4.97	5.00	4.73	99	95	80-120	5	30
Bromoform	5.00	5.01	5.00	4.65	100	93	62-128	7	30
Bromomethane	5.00	4.63	5.00	4.56	93	91	62-131	1	30
2-Butanone	37.5	26.62	37.5	26.71	71	71	66-135	0	30
Carbon Disulfide	5.00	5.27	5.00	4.99	105	100	65-120	5	30
Carbon Tetrachloride	5.00	5.48	5.00	5.07	110	101	79-124	8	30
Chlorobenzene	5.00	5.34	5.00	4.98	107	100	80-120	7	30
Chloroethane	5.00	4.26	5.00	4.10	85	82	63-125	4	30
Chloroform	5.00	4.91	5.00	4.63	98	93	80-120	6	30

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/29/2016 08:47

Group Number: 1694313

LCS/LCSD (continued)

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
Chloromethane	5.00	4.46	5.00	4.27	89	85	55-126	4	30
Dibromochloromethane	5.00	5.18	5.00	4.97	104	99	78-127	4	30
1,1-Dichloroethane	5.00	5.10	5.00	4.81	102	96	75-120	6	30
1,2-Dichloroethane	5.00	4.57	5.00	4.36	91	87	72-127	5	30
1,1-Dichloroethene	5.00	5.72	5.00	5.38	114	108	76-120	6	30
cis-1,2-Dichloroethene	5.00	5.37	5.00	5.04	107	101	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.52	5.00	5.27	110	105	80-120	5	30
1,2-Dichloropropane	5.00	4.96	5.00	4.73	99	95	80-120	5	30
cis-1,3-Dichloropropene	5.00	4.76	5.00	4.49	95	90	80-124	6	30
trans-1,3-Dichloropropene	5.00	4.71	5.00	4.40	94	88	77-121	7	30
Ethylbenzene	5.00	5.14	5.00	4.80	103	96	80-120	7	30
2-Hexanone	25	16.94	25	16.68	68*	67*	73-128	2	30
4-Methyl-2-pentanone	25	16.95	25	16.73	68*	67*	71-129	1	30
Methylene Chloride	5.00	5.23	5.00	4.91	105	98	80-120	6	30
Styrene	5.00	5.19	5.00	4.85	104	97	80-120	7	30
1,1,2,2-Tetrachloroethane	5.00	4.74	5.00	4.63	95	93	75-123	2	30
Tetrachloroethene	5.00	5.40	5.00	5.01	108	100	80-120	8	30
Toluene	5.00	5.24	5.00	4.93	105	99	80-120	6	30
112Trichloro122Trifluoroethane	5.00	6.00	5.00	5.46	120	109	75-120	9	30
1,1,1-Trichloroethane	5.00	5.24	5.00	4.85	105	97	79-120	8	30
1,1,2-Trichloroethane	5.00	5.24	5.00	4.98	105	100	80-120	5	30
Trichloroethene	5.00	5.40	5.00	5.06	108	101	80-120	6	30
Trichlorofluoromethane	5.00	5.36	5.00	4.98	107	100	71-131	7	30
Vinyl Acetate	12.5	10.53	12.5	9.32	84	75	63-122	12	30
Vinyl Chloride	5.00	4.71	5.00	4.49	94	90	62-128	5	30
m+p-Xylene	10	10.49	10	9.87	105	99	80-120	6	30
o-Xylene	5.00	5.16	5.00	4.88	103	98	80-120	6	30
Batch number: H162322AA	Sample number(s): 8523577,8523581								
Acetone	37.5	31.98	37.5	28.52	85	76	65-130	11	30
Benzene	5.00	5.32	5.00	5.19	106	104	80-120	2	30
Bromodichloromethane	5.00	5.27	5.00	5.20	105	104	80-120	1	30
Bromoform	5.00	5.00	5.00	5.29	100	106	62-128	6	30
Bromomethane	5.00	4.78	5.00	4.63	96	93	62-131	3	30
2-Butanone	37.5	31.74	37.5	27.25	85	73	66-135	15	30
Carbon Disulfide	5.00	5.39	5.00	5.29	108	106	65-120	2	30
Carbon Tetrachloride	5.00	5.55	5.00	5.73	111	115	79-124	3	30
Chlorobenzene	5.00	5.11	5.00	5.43	102	109	80-120	6	30
Chloroethane	5.00	4.43	5.00	4.34	89	87	63-125	2	30
Chloroform	5.00	5.12	5.00	5.09	102	102	80-120	1	30
Chloromethane	5.00	4.36	5.00	4.29	87	86	55-126	1	30
Dibromochloromethane	5.00	5.09	5.00	5.54	102	111	78-127	9	30
1,1-Dichloroethane	5.00	5.22	5.00	5.16	104	103	75-120	1	30
1,2-Dichloroethane	5.00	4.71	5.00	4.68	94	94	72-127	0	30
1,1-Dichloroethene	5.00	5.71	5.00	5.86	114	117	76-120	3	30
cis-1,2-Dichloroethene	5.00	5.61	5.00	5.37	112	107	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.72	5.00	5.71	114	114	80-120	0	30
1,2-Dichloropropane	5.00	5.24	5.00	5.06	105	101	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.90	5.00	4.90	98	98	80-124	0	30
trans-1,3-Dichloropropene	5.00	4.38	5.00	4.83	88	97	77-121	10	30

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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/29/2016 08:47

Group Number: 1694313

LCS/LCSD (continued)

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
Ethylbenzene	5.00	4.91	5.00	5.26	98	105	80-120	7	30
2-Hexanone	25	20.23	25	17.21	81	69*	73-128	16	30
4-Methyl-2-pentanone	25	20.42	25	17.74	82	71	71-129	14	30
Methylene Chloride	5.00	5.58	5.00	5.51	112	110	80-120	1	30
Styrene	5.00	4.99	5.00	5.34	100	107	80-120	7	30
1,1,2,2-Tetrachloroethane	5.00	4.71	5.00	5.10	94	102	75-123	8	30
Tetrachloroethene	5.00	5.12	5.00	5.60	102	112	80-120	9	30
Toluene	5.00	5.01	5.00	5.35	100	107	80-120	7	30
112Trichloro122Trifluoroethane	5.00	6.03	5.00	6.17	121*	123*	75-120	2	30
1,1,1-Trichloroethane	5.00	5.24	5.00	5.39	105	108	79-120	3	30
1,1,2-Trichloroethane	5.00	5.02	5.00	5.53	100	111	80-120	9	30
Trichloroethene	5.00	5.53	5.00	5.47	111	109	80-120	1	30
Trichlorofluoromethane	5.00	5.29	5.00	5.27	106	105	71-131	0	30
Vinyl Acetate	12.5	10.05	12.5	9.47	80	76	63-122	6	30
Vinyl Chloride	5.00	4.70	5.00	4.56	94	91	62-128	3	30
m+p-Xylene	10	10.1	10	10.8	101	108	80-120	7	30
o-Xylene	5.00	4.92	5.00	5.29	98	106	80-120	7	30
Batch number: H162352AA	Sample number(s): 8523573,8523580								
Acetone	37.5	27.9	37.5	31.82	74	85	65-130	13	30
Benzene	5.00	4.64	5.00	4.49	93	90	80-120	3	30
Bromodichloromethane	5.00	4.88	5.00	4.70	98	94	80-120	4	30
Bromoform	5.00	4.86	5.00	4.64	97	93	62-128	5	30
Bromomethane	5.00	4.55	5.00	4.40	91	88	62-131	3	30
2-Butanone	37.5	34.02	37.5	37.09	91	99	66-135	9	30
Carbon Disulfide	5.00	4.38	5.00	4.14	88	83	65-120	6	30
Carbon Tetrachloride	5.00	5.14	5.00	4.82	103	96	79-124	7	30
Chlorobenzene	5.00	4.69	5.00	4.49	94	90	80-120	4	30
Chloroethane	5.00	4.59	5.00	4.37	92	87	63-125	5	30
Chloroform	5.00	4.66	5.00	4.48	93	90	80-120	4	30
Chloromethane	5.00	4.40	5.00	4.07	88	81	55-126	8	30
Dibromochloromethane	5.00	4.92	5.00	4.68	98	94	78-127	5	30
1,1-Dichloroethane	5.00	4.74	5.00	4.58	95	92	75-120	3	30
1,2-Dichloroethane	5.00	4.63	5.00	4.53	93	91	72-127	2	30
1,1-Dichloroethene	5.00	4.71	5.00	4.50	94	90	76-120	5	30
cis-1,2-Dichloroethene	5.00	4.77	5.00	4.54	95	91	80-120	5	30
trans-1,2-Dichloroethene	5.00	4.79	5.00	4.64	96	93	80-120	3	30
1,2-Dichloropropane	5.00	4.70	5.00	4.55	94	91	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.67	5.00	4.43	93	89	80-124	5	30
trans-1,3-Dichloropropene	5.00	4.80	5.00	4.48	96	90	77-121	7	30
Ethylbenzene	5.00	4.62	5.00	4.42	92	88	80-120	5	30
2-Hexanone	25	23.51	25	24.66	94	99	73-128	5	30
4-Methyl-2-pentanone	25	23.86	25	25.05	95	100	71-129	5	30
Methylene Chloride	5.00	4.57	5.00	4.47	91	89	80-120	2	30
Styrene	5.00	4.80	5.00	4.55	96	91	80-120	5	30
1,1,2,2-Tetrachloroethane	5.00	4.58	5.00	4.38	92	88	75-123	5	30
Tetrachloroethene	5.00	4.60	5.00	4.35	92	87	80-120	6	30
Toluene	5.00	4.66	5.00	4.49	93	90	80-120	4	30
112Trichloro122Trifluoroethane	5.00	4.69	5.00	4.41	94	88	75-120	6	30

*- Outside of specification
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(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/29/2016 08:47

Group Number: 1694313

LCS/LCSD (continued)

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					
1,1,1-Trichloroethane	5.00	4.85	5.00	4.51	97	90	79-120	7	30
1,1,2-Trichloroethane	5.00	4.64	5.00	4.51	93	90	80-120	3	30
Trichloroethene	5.00	4.68	5.00	4.55	94	91	80-120	3	30
Trichlorofluoromethane	5.00	4.92	5.00	4.62	98	92	71-131	6	30
Vinyl Acetate	12.5	10.31	12.5	10.22	82	82	63-122	1	30
Vinyl Chloride	5.00	4.58	5.00	4.31	92	86	62-128	6	30
m+p-Xylene	10	9.31	10	8.93	93	89	80-120	4	30
o-Xylene	5.00	4.64	5.00	4.42	93	88	80-120	5	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162280013A	Sample number(s): 8523564,8523567,8523570,8523573-8523574,8523577								
Acetylene	51.2	50.39	51.2	44.43	98	87	61-148	13	20
Ethane	59.2	61.74	59.2	53.58	104	91	85-115	14	20
Ethene	60.8	63.36	60.8	54.97	104	90	83-115	14	20
Methane	59.8	64.13	59.8	54.86	107	92	85-115	16	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 162310635003	Sample number(s): 8523565-8523566,8523568-8523569,8523571-8523572,8523575-8523576,8523578-8523579								
Iron	1.00	0.945			95		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16225667131A	Sample number(s): 8523564,8523567,8523570,8523573-8523574,8523577								
Nitrate Nitrogen	0.750	0.744			99		90-110		
Sulfate	7.50	7.31			97		90-110		
Batch number: 16240298703A	Sample number(s): 8523564,8523567,8523570,8523573								
Total Organic Carbon	25	26.22			105		91-113		
Batch number: 16240298703B	Sample number(s): 8523574,8523577								
Total Organic Carbon	25	26.22			105		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16229133301A	Sample number(s): 8523564,8523570								
Sulfide	20	19.07	20	19.47	95	97	80-120	2	4
Batch number: 16231133301A	Sample number(s): 8523574,8523577								
Sulfide	20	19.27	20	19.27	96	96	80-120	0	4

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: H162291AA	Sample number(s): 8523564,8523567 UNSPK: P521864									

*- 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: 08/29/2016 08:47

Group Number: 1694313

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
Acetone	33.25		37.5	60.98	37.5	61.58	74	76	65-130	1	30
Benzene	0.2	U	5.00	5.33	5.00	5.53	107	111	80-120	4	30
Bromodichloromethane	0.5	U	5.00	5.07	5.00	5.49	101	110	80-120	8	30
Bromoform	0.5	U	5.00	4.88	5.00	5.45	98	109	62-128	11	30
Bromomethane	0.5	U	5.00	4.64	5.00	4.90	93	98	62-131	6	30
2-Butanone	5.0	U	37.5	44.47	37.5	26.54	119	71	66-135	51*	30
Carbon Disulfide	0.5	U	5.00	5.84	5.00	5.87	117	117	65-120	0	30
Carbon Tetrachloride	0.2	U	5.00	5.73	5.00	6.03	115	121	79-124	5	30
Chlorobenzene	0.5	U	5.00	5.23	5.00	5.65	105	113	80-120	8	30
Chloroethane	0.5	U	5.00	4.46	5.00	4.66	89	93	63-125	4	30
Chloroform	0.2	U	5.00	5.09	5.00	5.33	102	107	80-120	5	30
Chloromethane	0.5	U	5.00	4.34	5.00	4.60	87	92	55-126	6	30
Dibromochloromethane	0.5	U	5.00	5.14	5.00	5.64	103	113	78-127	9	30
1,1-Dichloroethane	0.5	U	5.00	5.31	5.00	5.40	106	108	75-120	2	30
1,2-Dichloroethane	0.2	U	5.00	4.53	5.00	4.74	91	95	72-127	5	30
1,1-Dichloroethene	0.2	U	5.00	6.12	5.00	6.44	122*	129*	76-120	5	30
cis-1,2-Dichloroethene	0.2	U	5.00	5.54	5.00	5.69	111	114	80-120	3	30
trans-1,2-Dichloroethene	0.2	U	5.00	5.86	5.00	5.97	117	119	80-120	2	30
1,2-Dichloropropane	0.5	U	5.00	5.09	5.00	5.43	102	109	80-120	6	30
cis-1,3-Dichloropropene	0.2	U	5.00	4.75	5.00	5.21	95	104	80-124	9	30
trans-1,3-Dichloropropene	0.2	U	5.00	4.53	5.00	4.97	91	99	77-121	9	30
Ethylbenzene	0.5	U	5.00	5.18	5.00	5.54	104	111	80-120	7	30
2-Hexanone	5.0	U	25	18.45	25	19.63	74	79	73-128	6	30
4-Methyl-2-pentanone	5.0	U	25	18.39	25	19.73	74	79	71-129	7	30
Methylene Chloride	0.5	U	5.00	5.26	5.00	5.36	105	107	80-120	2	30
Styrene	0.5	U	5.00	5.08	5.00	5.54	102	111	80-120	9	30
1,1,2,2-Tetrachloroethane	0.2	U	5.00	4.73	5.00	5.11	95	102	75-123	8	30
Tetrachloroethene	0.2	U	5.00	5.56	5.00	5.79	111	116	80-120	4	30
Toluene	0.2	U	5.00	5.31	5.00	5.68	106	114	80-120	7	30
112Trichloro122Trifluoroethane	0.5	U	5.00	6.53	5.00	6.60	131*	132*	75-120	1	30
1,1,1-Trichloroethane	0.5	U	5.00	5.46	5.00	5.67	109	113	79-120	4	30
1,1,2-Trichloroethane	0.2	U	5.00	5.03	5.00	5.61	101	112	80-120	11	30
Trichloroethene	0.201		5.00	5.78	5.00	6.09	112	118	80-120	5	30
Trichlorofluoromethane	0.5	U	5.00	5.50	5.00	5.97	110	119	71-131	8	30
Vinyl Chloride	0.2	U	5.00	4.71	5.00	5.01	94	100	62-128	6	30
m+p-Xylene	0.5	U	10	10.56	10	11.2	106	112	80-120	6	30
o-Xylene	0.5	U	5.00	5.09	5.00	5.48	102	110	80-120	8	30
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 162310635003	Sample number(s): 8523565-8523566,8523568-8523569,8523571-8523572,8523575-8523576,8523578-8523579 UNSPK: 8523579										
Iron	8.98		1.00	9.74	1.00	9.75	75 (2)	76 (2)	75-125	0	20
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 16225667131A	Sample number(s): 8523564,8523567,8523570,8523573-8523574,8523577 UNSPK: P523723										
Nitrate Nitrogen	0.50	U	5.00	5.13			103		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: 08/29/2016 08:47

Group Number: 1694313

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
Sulfate	177.85	200	371.95			97		90-110		
Batch number: 16240298703A	Sample number(s): 8523564,8523567,8523570,8523573 UNSPK: P523838									
Total Organic Carbon	2.52	10	13.42			109		91-113		
Batch number: 16240298703B	Sample number(s): 8523574,8523577 UNSPK: 8523574									
Total Organic Carbon	0.510	10	11.28			108		91-113		

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 162310635003	Sample number(s): 8523565-8523566,8523568-8523569,8523571-8523572,8523575-8523576,8523578-8523579 BKG: 8523579			
Iron	8.98	8.93	1	20
	mg/l	mg/l		
Batch number: 16225667131A	Sample number(s): 8523564,8523567,8523570,8523573-8523574,8523577 BKG: P523723			
Nitrate Nitrogen	0.50 U	0.50 U	0 (1)	15
Sulfate	177.85	177.98	0	15
Batch number: 16240298703A	Sample number(s): 8523564,8523567,8523570,8523573 BKG: P523838			
Total Organic Carbon	2.52	2.44	3 (1)	3
Batch number: 16240298703B	Sample number(s): 8523574,8523577 BKG: 8523574			
Total Organic Carbon	0.510	0.572	11* (1)	3
	mg/l	mg/l		
Batch number: 16229133301A	Sample number(s): 8523564,8523570 BKG: P523752			
Sulfide	6.61	6.50	2 (1)	20
Batch number: 16231133301A	Sample number(s): 8523574,8523577 BKG: P524933			
Sulfide	4.08	3.88	5 (1)	20

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 Boeing 38
Batch number: H162291AA

*- 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.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/29/2016 08:47

Group Number: 1694313

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
8523564	100	99	98	96
8523567	98	101	99	97
Blank	101	102	97	96
LCS	104	100	96	96
LCSD	101	101	97	97
MS	102	101	98	97
MSD	100	103	97	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162301AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8523570	98	99	99	94
8523573DL	103	101	97	95
8523574	102	102	97	93
Blank	103	100	96	95
LCS	100	102	99	97
LCSD	101	100	99	96
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162322AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8523577	104	101	96	93
8523581	102	107	99	94
Blank	101	106	99	95
LCS	109	106	92	96
LCSD	100	100	99	98
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162352AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8523573	99	101	101	99
8523580	106	108	96	99
8523580DL	102	97	98	97
Blank	103	104	98	100
LCS	102	103	99	100
LCSD	103	101	99	102
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 162280013A

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Quality Control Summary

Client Name: The Boeing Company
Group Number: 1694313
Reported: 08/29/2016 08:47

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
8523564	78
8523567	78
8523567DL	85
8523570	79
8523570DL	100
8523573	88
8523573DL	106
8523574	87
8523574DL	98
8523577	71
8523577DL	103
Blank	100
LCS	107
LCSD	93
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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1694313 Sample # 8523564-81
Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025.116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	4 Analyses Requested: VOC (38 list)	ToC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron					5 Remarks/Comments
BOP-83i-0816	8/11/16	0905	H2O	12	X	X	X	X	X	X	X	X					
BOP-82i-0816	8/11/16	0935	H2O	11	X	X	X		X	X	X	X					
BOP-80i-0816	8/11/16	1105	H2O	12	X	X	X	X	X	X	X	X					
BOP-07i-0816	8/11/16	1300	H2O	9	X	X	X		X	X							
BOP-16i-0816	8/11/16	1210	H2O	12	X	X	X	X	X	X	X	X					
BOP-91i-0816	8/11/16	1030	H2O	12	X	X	X	X	X	X	X	X					
BOP-W-0816	8/11/16	1200	H2O	3	X												
Trip Blanks	—	—	H2O	2	X												

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	8/11/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature] Abbott	Date/Time 8/12/16 0830

Relinquished by commercial carrier (circle): UPS FedEx Other:
Temperature upon Receipt: 1.7 °C
Custody Seals Intact?: Yes No

7

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.

Issued by Dept. 40 Management
7063.02

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 158155

Group Number(s): 1694313

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/12/2016 10:00
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 Krista Abel (3058) at 10:33 on 08/12/2016

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	DT146	1.7	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: August 24, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 08/16/2016
Group Number: 1695443
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-5-0816 Water	8529402
E-7-0816 Water	8529403
E-8-0816 Water	8529404
E-9-0816 Water	8529405
Trip Blank Water	8529406

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,

Kay Hower

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1695443

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8529402, 8529403

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8529404, 8529405, 8529406

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-23
4-methyl-2-pentanone	-25
2-hexanone	-28

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Batch #: H162322AA (Sample number(s): 8529404-8529406)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias:
112Trichloro122Trifluoroethane

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 2-Hexanone

Sample Description: E-5-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529402
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/15/2016 11:50 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE5

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below

Sample Description: E-5-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529402
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/15/2016 11:50 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE5

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162352AA	08/23/2016 01:17	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162352AA	08/23/2016 01:17	Matthew S Krause	1

Sample Description: E-7-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529403
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016 09:25 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE7

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**17**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.2**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**54**	**E**	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**19**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10

Sample Description: E-7-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529403
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016 09:25 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE7

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**13**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**37**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**14**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-23

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

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

Sample Description: E-7-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529403
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016 09:25 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE7

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162352AA	08/23/2016 01:57	Matthew S Krause	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H162352AA	08/23/2016 02:18	Matthew S Krause	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162352AA	08/23/2016 01:57	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H162352AA	08/23/2016 02:18	Matthew S Krause	10

Sample Description: E-8-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529404
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016 08:45 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE8

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**3.0**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-23
4-methyl-2-pentanone	-25
2-hexanone	-28

Sample Description: E-8-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529404
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016 08:45 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE8

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162322AA	08/19/2016 14:15	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162322AA	08/19/2016 14:15	Kerri E Legerlotz	1

Sample Description: E-9-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529405
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016 09:05 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE9

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.0**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.3**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-23
4-methyl-2-pentanone	-25
2-hexanone	-28

Sample Description: E-9-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529405
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016 09:05 by EMW The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

BOPE9

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162322AA	08/19/2016 14:35	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162322AA	08/19/2016 14:35	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529406
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016

The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

TBBOP

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-butanone	-23
4-methyl-2-pentanone	-25
2-hexanone	-28

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8529406
LL Group # 1695443
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/12/2016

The Boeing Company

Submitted: 08/16/2016 12:10
Reported: 08/24/2016 11:07

TBBOP

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162322AA	08/19/2016 12:54	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162322AA	08/19/2016 12:54	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Group Number: 1695443
Reported: 08/24/2016 11:07

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: H162322AA	Sample number(s): 8529404-8529406		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162352AA	Sample number(s): 8529402-8529403		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 08/24/2016 11:07

Group Number: 1695443

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

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: H162322AA	Sample number(s): 8529404-8529406								
Acetone	37.5	31.98	37.5	28.52	85	76	65-130	11	30
Benzene	5.00	5.32	5.00	5.19	106	104	80-120	2	30
Bromodichloromethane	5.00	5.27	5.00	5.20	105	104	80-120	1	30
Bromoform	5.00	5.00	5.00	5.29	100	106	62-128	6	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: 08/24/2016 11:07

Group Number: 1695443

LCS/LCSD (continued)

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
Bromomethane	5.00	4.78	5.00	4.63	96	93	62-131	3	30
2-Butanone	37.5	31.74	37.5	27.25	85	73	66-135	15	30
Carbon Disulfide	5.00	5.39	5.00	5.29	108	106	65-120	2	30
Carbon Tetrachloride	5.00	5.55	5.00	5.73	111	115	79-124	3	30
Chlorobenzene	5.00	5.11	5.00	5.43	102	109	80-120	6	30
Chloroethane	5.00	4.43	5.00	4.34	89	87	63-125	2	30
Chloroform	5.00	5.12	5.00	5.09	102	102	80-120	1	30
Chloromethane	5.00	4.36	5.00	4.29	87	86	55-126	1	30
Dibromochloromethane	5.00	5.09	5.00	5.54	102	111	78-127	9	30
1,1-Dichloroethane	5.00	5.22	5.00	5.16	104	103	75-120	1	30
1,2-Dichloroethane	5.00	4.71	5.00	4.68	94	94	72-127	0	30
1,1-Dichloroethene	5.00	5.71	5.00	5.86	114	117	76-120	3	30
cis-1,2-Dichloroethene	5.00	5.61	5.00	5.37	112	107	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.72	5.00	5.71	114	114	80-120	0	30
1,2-Dichloropropane	5.00	5.24	5.00	5.06	105	101	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.90	5.00	4.90	98	98	80-124	0	30
trans-1,3-Dichloropropene	5.00	4.38	5.00	4.83	88	97	77-121	10	30
Ethylbenzene	5.00	4.91	5.00	5.26	98	105	80-120	7	30
2-Hexanone	25	20.23	25	17.21	81	69*	73-128	16	30
4-Methyl-2-pentanone	25	20.42	25	17.74	82	71	71-129	14	30
Methylene Chloride	5.00	5.58	5.00	5.51	112	110	80-120	1	30
Styrene	5.00	4.99	5.00	5.34	100	107	80-120	7	30
1,1,2,2-Tetrachloroethane	5.00	4.71	5.00	5.10	94	102	75-123	8	30
Tetrachloroethene	5.00	5.12	5.00	5.60	102	112	80-120	9	30
Toluene	5.00	5.01	5.00	5.35	100	107	80-120	7	30
112Trichloro122Trifluoroethane	5.00	6.03	5.00	6.17	121*	123*	75-120	2	30
1,1,1-Trichloroethane	5.00	5.24	5.00	5.39	105	108	79-120	3	30
1,1,2-Trichloroethane	5.00	5.02	5.00	5.53	100	111	80-120	9	30
Trichloroethene	5.00	5.53	5.00	5.47	111	109	80-120	1	30
Trichlorofluoromethane	5.00	5.29	5.00	5.27	106	105	71-131	0	30
Vinyl Acetate	12.5	10.05	12.5	9.47	80	76	63-122	6	30
Vinyl Chloride	5.00	4.70	5.00	4.56	94	91	62-128	3	30
m+p-Xylene	10	10.1	10	10.8	101	108	80-120	7	30
o-Xylene	5.00	4.92	5.00	5.29	98	106	80-120	7	30
Batch number: H162352AA	Sample number(s): 8529402-8529403								
Acetone	37.5	27.9	37.5	31.82	74	85	65-130	13	30
Benzene	5.00	4.64	5.00	4.49	93	90	80-120	3	30
Bromodichloromethane	5.00	4.88	5.00	4.70	98	94	80-120	4	30
Bromoform	5.00	4.86	5.00	4.64	97	93	62-128	5	30
Bromomethane	5.00	4.55	5.00	4.40	91	88	62-131	3	30
2-Butanone	37.5	34.02	37.5	37.09	91	99	66-135	9	30
Carbon Disulfide	5.00	4.38	5.00	4.14	88	83	65-120	6	30
Carbon Tetrachloride	5.00	5.14	5.00	4.82	103	96	79-124	7	30
Chlorobenzene	5.00	4.69	5.00	4.49	94	90	80-120	4	30
Chloroethane	5.00	4.59	5.00	4.37	92	87	63-125	5	30
Chloroform	5.00	4.66	5.00	4.48	93	90	80-120	4	30
Chloromethane	5.00	4.40	5.00	4.07	88	81	55-126	8	30
Dibromochloromethane	5.00	4.92	5.00	4.68	98	94	78-127	5	30
1,1-Dichloroethane	5.00	4.74	5.00	4.58	95	92	75-120	3	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: 08/24/2016 11:07

Group Number: 1695443

LCS/LCSD (continued)

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
1,2-Dichloroethane	5.00	4.63	5.00	4.53	93	91	72-127	2	30
1,1-Dichloroethene	5.00	4.71	5.00	4.50	94	90	76-120	5	30
cis-1,2-Dichloroethene	5.00	4.77	5.00	4.54	95	91	80-120	5	30
trans-1,2-Dichloroethene	5.00	4.79	5.00	4.64	96	93	80-120	3	30
1,2-Dichloropropane	5.00	4.70	5.00	4.55	94	91	80-120	3	30
cis-1,3-Dichloropropene	5.00	4.67	5.00	4.43	93	89	80-124	5	30
trans-1,3-Dichloropropene	5.00	4.80	5.00	4.48	96	90	77-121	7	30
Ethylbenzene	5.00	4.62	5.00	4.42	92	88	80-120	5	30
2-Hexanone	25	23.51	25	24.66	94	99	73-128	5	30
4-Methyl-2-pentanone	25	23.86	25	25.05	95	100	71-129	5	30
Methylene Chloride	5.00	4.57	5.00	4.47	91	89	80-120	2	30
Styrene	5.00	4.80	5.00	4.55	96	91	80-120	5	30
1,1,2,2-Tetrachloroethane	5.00	4.58	5.00	4.38	92	88	75-123	5	30
Tetrachloroethene	5.00	4.60	5.00	4.35	92	87	80-120	6	30
Toluene	5.00	4.66	5.00	4.49	93	90	80-120	4	30
112Trichloro122Trifluoroethane	5.00	4.69	5.00	4.41	94	88	75-120	6	30
1,1,1-Trichloroethane	5.00	4.85	5.00	4.51	97	90	79-120	7	30
1,1,2-Trichloroethane	5.00	4.64	5.00	4.51	93	90	80-120	3	30
Trichloroethene	5.00	4.68	5.00	4.55	94	91	80-120	3	30
Trichlorofluoromethane	5.00	4.92	5.00	4.62	98	92	71-131	6	30
Vinyl Acetate	12.5	10.31	12.5	10.22	82	82	63-122	1	30
Vinyl Chloride	5.00	4.58	5.00	4.31	92	86	62-128	6	30
m+p-Xylene	10	9.31	10	8.93	93	89	80-120	4	30
o-Xylene	5.00	4.64	5.00	4.42	93	88	80-120	5	30

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 Boeing 38
Batch number: H162322AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8529404	102	98	98	94
8529405	100	100	97	93
8529406	104	107	96	96
Blank	101	106	99	95
LCS	109	106	92	96
LCSD	100	100	99	98
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162352AA

*- 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
Group Number: 1695443
Reported: 08/24/2016 11:07

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.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8529402	103	100	98	99
8529403	99	100	99	98
8529403DL	100	101	99	98
Blank	103	104	98	100
LCS	102	103	99	100
LCSD	103	101	99	102
Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1695443 Sample # 552402-06

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, OR
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): _____
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 List)	(5) Remarks/Comments
E-5-0816	8/15/16	1150	H_2O	3	X	
E-7-0816	8/12/16	0925	H_2O	3	X	
E-8-0816	8/12/16	0845	H_2O	3	X	
E-9-0816	8/12/16	0905	H_2O	3	X	
Trip Blanks	—	—	H_2O	2	X	

(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	8/15/16 1446		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 8/16/16 1150

Relinquished by commercial carrier (circle): UPS (FedEx) Other: _____
Temperature upon Receipt: 0.6 °C
Custody Seals Intact?: (Yes) No

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.

Issued by Dept. 40 Management
7063.02

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Sample Administration Receipt Documentation Log

Doc Log ID: 158539

Group Number(s): 1695443

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	08/16/2016 12:10
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 Krista Abel (3058) at 13:28 on 08/16/2016

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	DT146	0.6	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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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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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: September 08, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 08/23/2016
Group Number: 1698272
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
E-6-0816 Water	8542794
E-11-0816 Water	8542795
Trip Blanks Water	8542796

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,

Kay Hower

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1698272

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 #: 162380002A (Sample number(s): 8542795 UNSPK: P545746)

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

Sample Description: E-6-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8542794
LL Group # 1698272
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/18/2016 15:20 by EMW The Boeing Company

Submitted: 08/23/2016 09:30
Reported: 09/08/2016 19:27

E-6--

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.4**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.8**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**7.0**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**13**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

Sample Description: E-6-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8542794
LL Group # 1698272
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/18/2016 15:20 by EMW The Boeing Company

Submitted: 08/23/2016 09:30
Reported: 09/08/2016 19:27

E-6--

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H162381AA	08/25/2016 15:18	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162381AA	08/25/2016 15:18	Angela D Sneeringer	1

Sample Description: E-11-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8542795
LL Group # 1698272
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/22/2016 09:00 by EMW The Boeing Company

Submitted: 08/23/2016 09:30
Reported: 09/08/2016 19:27

E-11-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**92**		5.0	1
11996	**Benzene**	71-43-2	**0.2**		0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**8.0**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**5.8**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	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	**5.1**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**19,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200

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Analysis Report

Sample Description: E-11-0816 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8542795
LL Group # 1698272
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/22/2016 09:00 by EMW The Boeing Company

Submitted: 08/23/2016 09:30
Reported: 09/08/2016 19:27

E-11-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC Miscellaneous	**RSKSOP-175 modified**		**ug/l**		**ug/l**	
07105	**Methane**	74-82-8	**23,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	Sulfate	14808-79-8	1.0	U	1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**45.4**		1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162381AA	08/25/2016 15:59	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162381AA	08/25/2016 15:59	Angela D Sneeringer	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	162380002A	08/25/2016 11:34	Nicholas R Rossi	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	162380002A	08/31/2016 16:09	Nicholas R Rossi	200
00368	Nitrate Nitrogen	EPA 300.0	1	16236667131A	08/23/2016 17:52	Drew M Gerhart	1
00228	Sulfate	EPA 300.0	1	16236667131A	08/23/2016 17:52	Drew M Gerhart	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16250298702B	09/07/2016 01:57	Clinton M Wilson	1

Sample Description: Trip Blanks Water
Boeing Portland 0025116.116.412

LL Sample # WW 8542796
LL Group # 1698272
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/18/2016

The Boeing Company

Submitted: 08/23/2016 09:30
Reported: 09/08/2016 19:27

BOETB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162381AA	08/25/2016 13:16	Angela D Sneeringer	1

Sample Description: Trip Blanks Water
Boeing Portland 0025116.116.412

LL Sample # WW 8542796
LL Group # 1698272
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 08/18/2016

The Boeing Company

Submitted: 08/23/2016 09:30
Reported: 09/08/2016 19:27

BOETB

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162381AA	08/25/2016 13:16	Angela D Sneeringer	1

Quality Control Summary

Client Name: The Boeing Company
Group Number: 1698272
Reported: 09/08/2016 19:27

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: H162381AA	Sample number(s): 8542794-8542796		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 162380002A	Sample number(s): 8542795		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0

*- 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: 09/08/2016 19:27

Group Number: 1698272

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 16236667131A	Sample number(s): 8542795		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16250298702B	Sample number(s): 8542795		
Total Organic Carbon	1.0	U	1.0

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: H162381AA	Sample number(s): 8542794-8542796								
Acetone	37.5	37.73	37.5	38.77	101	103	65-130	3	30
Benzene	5.00	4.91	5.00	4.91	98	98	80-120	0	30
Bromodichloromethane	5.00	5.15	5.00	5.12	103	102	80-120	1	30
Bromoform	5.00	5.25	5.00	5.17	105	103	62-128	2	30
Bromomethane	5.00	4.70	5.00	4.79	94	96	62-131	2	30
2-Butanone	37.5	40.03	37.5	43.37	107	116	66-135	8	30
Carbon Disulfide	5.00	4.54	5.00	4.33	91	87	65-120	5	30
Carbon Tetrachloride	5.00	5.05	5.00	4.93	101	99	79-124	2	30
Chlorobenzene	5.00	5.05	5.00	4.97	101	99	80-120	2	30
Chloroethane	5.00	4.83	5.00	4.78	97	96	63-125	1	30
Chloroform	5.00	4.97	5.00	4.94	99	99	80-120	1	30
Chloromethane	5.00	4.44	5.00	4.37	89	87	55-126	2	30
Dibromochloromethane	5.00	5.13	5.00	5.11	103	102	78-127	0	30
1,1-Dichloroethane	5.00	5.06	5.00	4.91	101	98	75-120	3	30
1,2-Dichloroethane	5.00	4.96	5.00	5.07	99	101	72-127	2	30
1,1-Dichloroethene	5.00	5.05	5.00	4.84	101	97	76-120	4	30
cis-1,2-Dichloroethene	5.00	4.98	5.00	5.01	100	100	80-120	1	30
trans-1,2-Dichloroethene	5.00	5.09	5.00	5.01	102	100	80-120	2	30
1,2-Dichloropropane	5.00	5.02	5.00	5.01	100	100	80-120	0	30
cis-1,3-Dichloropropene	5.00	4.85	5.00	4.89	97	98	80-124	1	30
trans-1,3-Dichloropropene	5.00	5.09	5.00	5.11	102	102	77-121	0	30
Ethylbenzene	5.00	5.02	5.00	4.91	100	98	80-120	2	30
2-Hexanone	25	27.5	25	29.21	110	117	73-128	6	30
4-Methyl-2-pentanone	25	26.82	25	28.57	107	114	71-129	6	30
Methylene Chloride	5.00	4.88	5.00	4.88	98	98	80-120	0	30
Styrene	5.00	5.14	5.00	5.15	103	103	80-120	0	30
1,1,2,2-Tetrachloroethane	5.00	5.10	5.00	4.94	102	99	75-123	3	30
Tetrachloroethene	5.00	4.92	5.00	4.82	98	96	80-120	2	30
Toluene	5.00	5.05	5.00	4.96	101	99	80-120	2	30
112Trichloro122Trifluoroethane	5.00	4.96	5.00	4.52	99	90	75-120	9	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: 09/08/2016 19:27

Group Number: 1698272

LCS/LCSD (continued)

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					
1,1,1-Trichloroethane	5.00	4.94	5.00	4.88	99	98	79-120	1	30
1,1,2-Trichloroethane	5.00	5.11	5.00	5.10	102	102	80-120	0	30
Trichloroethene	5.00	5.06	5.00	4.94	101	99	80-120	2	30
Trichlorofluoromethane	5.00	4.99	5.00	4.94	100	99	71-131	1	30
Vinyl Acetate	12.5	10.92	12.5	10.47	87	84	63-122	4	30
Vinyl Chloride	5.00	4.68	5.00	4.62	94	92	62-128	1	30
m+p-Xylene	10	10.05	10	9.95	100	99	80-120	1	30
o-Xylene	5.00	4.98	5.00	4.92	100	98	80-120	1	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 162380002A	Sample number(s): 8542795								
Acetylene	51.2	48.94			96		61-148		
Ethane	59.2	58.51			99		85-115		
Ethene	60.8	59.53			98		83-115		
Methane	59.8	61.2			102		85-115		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16236667131A	Sample number(s): 8542795								
Nitrate Nitrogen	0.750	0.743			99		90-110		
Sulfate	7.50	7.32			98		90-110		
Batch number: 16250298702B	Sample number(s): 8542795								
Total Organic Carbon	25	27.59			110		91-113		

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: 162380002A	Sample number(s): 8542795 UNSPK: P545746									
Acetylene		51.2	45.58	51.2	47.87	89	94	61-148	5	20
Ethane		59.2	58.26	59.2	61.32	94	100	74-131	5	30
Ethene		60.8	64.76	60.8	68.75	107	113	72-133	6	30
Methane		59.8	6373.96	59.8	6511.29	288 (2)	518 (2)	73-125	2	30
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16236667131A	Sample number(s): 8542795 UNSPK: P541439									
Nitrate Nitrogen	7.21	5.00	12.47			105		90-110		
Sulfate	20.16	50	72			104		90-110		
Batch number: 16250298702B	Sample number(s): 8542795 UNSPK: P539705									
Total Organic Carbon	209.48	50	260.6			102 (2)		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: 09/08/2016 19:27

Group Number: 1698272

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: 16236667131A	Sample number(s): 8542795 BKG: P541439			
Nitrate Nitrogen	7.21	7.30	1	15
Sulfate	20.16	20.38	1 (1)	15
Batch number: 16250298702B	Sample number(s): 8542795 BKG: P539705			
Total Organic Carbon	209.48	211.94	1	3

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 Boeing 38
Batch number: H162381AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8542794	102	99	99	98
8542795	102	102	97	102
8542796	102	101	100	99
Blank	100	102	100	99
LCS	100	100	100	99
LCSD	102	106	99	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 162380002A

	Propene
8542795	98
8542795DL	106
Blank	104
LCS	107
MS	85
MSD	88
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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1695272 Sample # 8542794-96

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify): _____
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) VOCs (38 List)	ToC	Sulfate	Nitrate	AMEE	(5) Remarks/Comments
E-6-0816	8/18/16	1520	H2O	3	X					
E-11-0816	8/22/16	0900	H2O	9	X	X	X	X	X	
Trip Blanks	—	—	H2O	2	X					

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day | 72 hour | 48 hour | 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
EWarbel	8/22/16 1200		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: JeHuber	Date/Time 8/23/16 @ 930

Relinquished by commercial carrier (circle): UPS FedEx Other: _____

Temperature upon Receipt: 2.1 °C

Custody Seals Intact?: (Yes) No

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.
Issued by Dept. 40 Management
7063.02

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 159761

Group Number(s):

Client: Boeing

1698272

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	08/23/2016 9:30
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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 Joseph Huber (7831) at 10:06 on 08/23/2016

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	2.1	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T : 717-656-2300
F : 717-656-2681
www.LancasterLabs.com

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 ≥ 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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4Q16 TGA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Danielle Jorgensen

DATE: December 16, 2016

RE: **Boeing Portland Troutdale Gravel Aquifer (TGA)**
Fourth Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 31 groundwater samples, 4 field duplicates, 6 trip blanks, and 22 vapor samples collected during the fourth quarter 2016 TGA sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental (LLI), located in Lancaster, Pennsylvania, and Eurofins Air Toxics (Air Toxics) located in Folsom, California. This data quality evaluation covers LLI data packages 1730237, 1730239, 1730794, 1732119, 1732377, and 1734526, and Air Toxics data packages 1611211 and 1611377. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs], US Environmental Protection Agency [EPA] Method SW8260C); conventional inorganic parameters including N-Nitrate, N-Nitrite, and sulfate (EPA Method 300.0); sulfide (EPA Method 376.1); total and dissolved iron (EPA Method 6010C); total phosphorous (EPA Method 365.1); N-Ammonia (Method SM 4500 NH3 D); total organic carbon (Method SM 5310 C-2000); and methane, ethane, ethane, and acetylene (MEEA; Modified RSK 175). Samples submitted to Air Toxics were analyzed for VOCs (Method TO-15).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008) and the *National Functional Guidelines for Inorganic Data Review* (EPA 2004, 2010). Landau Associates, Inc. (LAI) performed an EPA-equivalent Level IIA verification and validation check on each laboratory data package, which included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. Data qualifiers are summarized in Table 1.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition, with the following exceptions:

- Sample preservation requirements were not met for sulfide for sample BOP-88i-0516 in data package 1730794 upon laboratory sample receipt. Laboratory staff attempted to correct the issue; however, after adding the maximum amount of preservation allowable, the sample pH still exceeded the analytical method requirement. The associated sample result was qualified as estimated (UJ), as indicated in Table 1.
- The final vacuum recorded for the summa canister used to collect sample SVE-Gac1-1116 in data package 1611211 was measured at ambient pressure; readings were confirmed by the laboratory upon sample receipt. Due to the potential low bias of the corresponding sample, the associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.

All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperatures were recorded. The coolers were received with temperatures within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times, with the following, exceptions:

- The VOC analysis for sample BOP-88i-1116 in data package 1730794 was completed 3 days outside the method-recommended holding time (a preserved vial was submitted for analysis, but the pH at the time of analysis was 4, thereby shortening the hold time to 7 days). The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The nitrate re-analysis for samples BOP-76i-1116 and BOP-77i-1116 in data package 1732119 was completed outside the method-recommended hold time. The original analysis results should not be reported; the associated sample re-analysis results were qualified as estimated (J, UJ), as indicated in Table 1.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for analysis. Target analytes were not detected at concentrations greater than the reporting limits in the associated method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

Six trip blanks were submitted to the laboratory for VOC analysis with the sample batches. Target analytes were not detected at concentrations greater than the reporting limits in the associated trip blanks. No field equipment blanks were submitted for analysis with these sample batches.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the organics analyses. Recovery values for the surrogate spikes were within the current laboratory-specified control limits. No qualification of the data was necessary.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

At least one MS and/or laboratory replicate sample were analyzed with the conventional parameters and/or metals analyses in data packages 1730237, 1730794, 1732119, and 1732377. The recovery values for each required spiking compound and/or the relative percent differences (RPDs) between the laboratory replicate results were within the current project-specified and/or laboratory-specified control limits for all project samples with the following exceptions:

- The MS/MSD RPD for iron associated with the total and dissolved metals analyses of sample BOP-16i-1116 in data package 1730794 exceeded the laboratory-specified control limit. The associated sample results were qualified as estimated (J), as indicated in Table 1.
- The MS recovery for nitrate associated with the conventionals analysis of sample TowerEff-1116 in data package 1730237 exceeded the laboratory-specified control limit. The associated sample result was qualified as estimated (J), as indicated in Table 1.
- The MS/MSD recoveries and associated RPD for iron associated with the total and dissolved metals analysis of sample BOP-80i-1116 in data package 1732377 exceeded the laboratory-specified control limit. The original sample concentration was equal to or greater than four times the associated spike concentration; therefore, no qualification of the data was necessary.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for analysis. Recoveries and RPDs for the laboratory control

samples and associated duplicates were within the current laboratory-specified control limits, with the following exceptions:

- The LCS/LCSD recoveries for 2-hexanone associated with the VOC analyses in data packages 1730237, 1730239, 1732119, and 1734526 were less than the laboratory-specified control limit. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The LCS/LCSD recoveries for vinyl chloride associated with the VOC analyses in data package 1611377 exceeded the laboratory-specified control limit. Vinyl chloride was not detected in the associated sample; therefore, no qualification of the data due to potential high analytical bias was necessary.

Blind Field Duplicate Results

As specified in the QAPP, blind field duplicate samples were collected at a rate of one blind field duplicate sample per 20 samples, but not less than one blind field duplicate per sampling round. Four pairs of blind field duplicate water samples (TowerInf-1116/TowerInD-1116, TowerEff-1116/TowerEfD-1116, BOP-Y-1116/BOP-07i-1116, and BOP-X-1116/E-2-1116) were submitted for analysis with data packages 1730237, 1730239, and 1730794.

A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for the duplicate sample pairs submitted for analysis were within the project-specified control limits, with the following exceptions:

- The RPDs for cis-1,2-dichloroethene associated with the VOC analysis of sample pair TowerInf-1116/TowerInD-1116 in data package 1730237 exceeded the laboratory-specified control limit; the associated sample results were qualified as estimated (J), as indicated in Table 1.
- The RPD for trichloroethene associated with the VOC analysis of sample pair BOP-Y-1116/ BOP-07i-1116 in data package 1730794 exceeded the laboratory-specified control limit; the associated sample results were qualified as estimated (J), as indicated in Table 1.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where dilution was performed due to the presence of high level target species or sample matrix interference.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for these sample batches. Based on the laboratory's case narratives, continuing calibration verification (CCV) recovery results were within laboratory-specified control limits, with the following exceptions:

- The CCV was high for vinyl chloride in data package 1734526. Detected concentrations of vinyl chloride in the associated samples were qualified as estimated (J), as indicated in Table 1.

- The CCV was low for several compounds in data packages 1730237, 1730239, 1730794, 1732119, 1732377, and 1734526. The associated sample results were qualified as estimated, as indicated in Table 1.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates, laboratory duplicates, matrix spike duplicates, and blind field duplicates. Data accuracy was evaluated through laboratory control samples, matrix spikes, and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



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Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1730237	4-Methyl-2-pentanone	5.0 U	UJ	TOWEREFD-1116	Low CCV recovery
1730237	2-Hexanone	5.0 U	UJ	TOWEREFD-1116	Low CCV recovery; low LCSD recovery
1730237	Acetone	5.0 U	UJ	TOWEREFD-1116	Low CCV recovery
1730237	Chloromethane	0.5 U	UJ	TOWEREFD-1116	Low CCV recovery
1730237	Vinyl Chloride	0.2 U	UJ	TOWEREFD-1116	Low CCV recovery
1730237	2-Butanone/MEK	5.0 U	UJ	TOWEREFD-1116	Low CCV recovery
1730237	Nitrogen, Nitrate (as N)	2.1	J	TOWEREFF-1116	High matrix spike recovery
1730237	4-Methyl-2-pentanone	5.0 U	UJ	TOWEREFF-1116	Low CCV recovery
1730237	2-Hexanone	5.0 U	UJ	TOWEREFF-1116	Low CCV recovery; low LCSD recovery
1730237	Acetone	5.0 U	UJ	TOWEREFF-1116	Low CCV recovery
1730237	Chloromethane	0.5 U	UJ	TOWEREFF-1116	Low CCV recovery
1730237	Vinyl Chloride	0.2 U	UJ	TOWEREFF-1116	Low CCV recovery
1730237	2-Butanone/MEK	5.0 U	UJ	TOWEREFF-1116	Low CCV recovery
1730237	4-Methyl-2-pentanone	5.0 U	UJ	TOWERIND-1116	Low CCV recovery
1730237	cis-1,2-Dichloroethene	2.7	J	TOWERIND-1116	High field duplicate RPD
1730237	2-Hexanone	5.0 U	UJ	TOWERIND-1116	Low CCV recovery; low LCSD recovery
1730237	Acetone	5.0 U	UJ	TOWERIND-1116	Low CCV recovery
1730237	Chloromethane	0.5 U	UJ	TOWERIND-1116	Low CCV recovery
1730237	Vinyl Chloride	0.2 U	UJ	TOWERIND-1116	Low CCV recovery
1730237	2-Butanone/MEK	5.0 U	UJ	TOWERIND-1116	Low CCV recovery
1730237	4-Methyl-2-pentanone	5.0 U	UJ	TOWERINF-1116	Low CCV recovery
1730237	cis-1,2-Dichloroethene	2.2	J	TOWERINF-1116	High field duplicate RPD
1730237	2-Hexanone	5.0 U	UJ	TOWERINF-1116	Low CCV recovery; low LCSD recovery
1730237	Acetone	5.0 U	UJ	TOWERINF-1116	Low CCV recovery
1730237	Chloromethane	0.5 U	UJ	TOWERINF-1116	Low CCV recovery
1730237	Vinyl Chloride	0.2 U	UJ	TOWERINF-1116	Low CCV recovery
1730237	2-Butanone/MEK	5.0 U	UJ	TOWERINF-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	BOP-75I-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	BOP-75I-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	14	J	BOP-75I-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	BOP-75I-1116	Low CCV recovery
1730239	Vinyl Chloride	3.4	J	BOP-75I-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	BOP-75I-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	BOP-78I-1116	Low CCV recovery
1730239	2-Hexanone	7.6	J	BOP-78I-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	45	J	BOP-78I-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	BOP-78I-1116	Low CCV recovery
1730239	Vinyl Chloride	7.5	J	BOP-78I-1116	Low CCV recovery
1730239	2-Butanone/MEK	83	J	BOP-78I-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	BOP-79I-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	BOP-79I-1116	Low CCV recovery; low LCSD recovery
1730239	Chloromethane	0.5 U	UJ	BOP-79I-1116	Low CCV recovery
1730239	Vinyl Chloride	3.7	J	BOP-79I-1116	Low CCV recovery
1730239	Acetone	1200	J	BOP-79I-1116	Low CCV recovery
1730239	2-Butanone/MEK	410	J	BOP-79I-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	BOP-84I-1116	Low CCV recovery
1730239	2-Hexanone	6.4	J	BOP-84I-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	BOP-84I-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	BOP-84I-1116	Low CCV recovery
1730239	Vinyl Chloride	1.5	J	BOP-84I-1116	Low CCV recovery
1730239	2-Butanone/MEK	220	J	BOP-84I-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	BOP-85I-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	BOP-85I-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	BOP-85I-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	BOP-85I-1116	Low CCV recovery
1730239	Vinyl Chloride	0.9	J	BOP-85I-1116	Low CCV recovery
1730239	2-Butanone/MEK	150	J	BOP-85I-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	BOP-86I-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	BOP-86I-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	100	J	BOP-86I-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	BOP-86I-1116	Low CCV recovery
1730239	Vinyl Chloride	1.6	J	BOP-86I-1116	Low CCV recovery

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1730239	2-Butanone/MEK	85	J	BOP-86I-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.5	J	BOP-87I-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	BOP-87I-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	27	J	BOP-87I-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	BOP-87I-1116	Low CCV recovery
1730239	Vinyl Chloride	0.8	J	BOP-87I-1116	Low CCV recovery
1730239	2-Butanone/MEK	33	J	BOP-87I-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	BOP-X-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	BOP-X-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	BOP-X-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	BOP-X-1116	Low CCV recovery
1730239	Vinyl Chloride	0.6	J	BOP-X-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	BOP-X-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	DP1-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	DP1-1116	Low CCV recovery
1730239	Acetone	5.0 U	UJ	DP1-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	DP1-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	E-12-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	E-12-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	E-12-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	E-12-1116	Low CCV recovery
1730239	Vinyl Chloride	0.2 U	UJ	E-12-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	E-12-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	E-13-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	E-13-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	E-13-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	E-13-1116	Low CCV recovery
1730239	Vinyl Chloride	0.2 U	UJ	E-13-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	E-13-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	E-15-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	E-15-1116	Low CCV recovery
1730239	Acetone	5.0 U	UJ	E-15-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	E-15-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	E-16-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	E-16-1116	Low CCV recovery
1730239	Acetone	5.0 U	UJ	E-16-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	E-16-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	E-2-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	E-2-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	E-2-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	E-2-1116	Low CCV recovery
1730239	Vinyl Chloride	0.6	J	E-2-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	E-2-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	E-3-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	E-3-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	E-3-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	E-3-1116	Low CCV recovery
1730239	Vinyl Chloride	2.3	J	E-3-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	E-3-1116	Low CCV recovery
1730239	4-Methyl-2-pentanone	5.0 U	UJ	E-4-1116	Low CCV recovery
1730239	2-Hexanone	5.0 U	UJ	E-4-1116	Low CCV recovery; low LCSD recovery
1730239	Acetone	5.0 U	UJ	E-4-1116	Low CCV recovery
1730239	Chloromethane	0.5 U	UJ	E-4-1116	Low CCV recovery
1730239	Vinyl Chloride	0.2 U	UJ	E-4-1116	Low CCV recovery
1730239	2-Butanone/MEK	5.0 U	UJ	E-4-1116	Low CCV recovery
1730794	Trichloroethene	230	J	BOP-07I-1116	High field duplicate RPD
1730794	4-Methyl-2-pentanone	10 U	UJ	BOP-07I-1116	Low CCV recovery
1730794	2-Hexanone	10 U	UJ	BOP-07I-1116	Low CCV recovery
1730794	Acetone	10 U	UJ	BOP-07I-1116	Low CCV recovery
1730794	2-Butanone/MEK	10 U	UJ	BOP-07I-1116	Low CCV recovery
1730794	Iron	0.444	J	BOP-16I-1116	High matrix spike recovery
1730794	Iron	0.473	J	BOP-16I-1116	High matrix spike recovery

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1730794	4-Methyl-2-pentanone	5 U	UJ	BOP-16I-1116	Low CCV recovery
1730794	2-Hexanone	5 U	UJ	BOP-16I-1116	Low CCV recovery
1730794	Acetone	5 U	UJ	BOP-16I-1116	Low CCV recovery
1730794	2-Butanone/MEK	5 U	UJ	BOP-16I-1116	Low CCV recovery
1730794	Sulfide, Total	2 U	UJ	BOP-88I-1116	Preservation requirement not met
1730794	cis-1,2-Dichloroethene	110	J	BOP-88I-1116	Analyzed outside hold time
1730794	Acetone	1200	J	BOP-88I-1116	Low CCV recovery; analyzed outside hold time
1730794	2-Butanone/MEK	1600	J	BOP-88I-1116	Low CCV recovery; analyzed outside hold time
1730794	Ethylbenzene	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Styrene	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	cis-1,3-Dichloropropene	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	trans-1,3-Dichloropropene	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	1,2-Dichloroethane	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Vinyl Acetate	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	4-Methyl-2-pentanone	10 U	UJ	BOP-88I-1116	Low CCV recovery; analyzed outside hold time
1730794	Toluene	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Chlorobenzene	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Dibromochloromethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Tetrachloroethene	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	trans-1,2-Dichloroethene	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	m-&p-Xylenes	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Carbon Tetrachloride	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	2-Hexanone	10 U	UJ	BOP-88I-1116	Low CCV recovery; analyzed outside hold time
1730794	Chloroform	1.8	J	BOP-88I-1116	Analyzed outside hold time
1730794	Benzene	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	1,1,1-Trichloroethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Bromomethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Chloromethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Chloroethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Vinyl Chloride	7.4	J	BOP-88I-1116	Analyzed outside hold time
1730794	Methylene Chloride	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Carbon Disulfide	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Bromoform	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Bromodichloromethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	1,1-Dichloroethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	1,1-Dichloroethene	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Trichlorofluoromethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	1,1,2-Trichloro-1,2,2-Trifluoroethane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	1,2-Dichloropropane	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	1,1,2-Trichloroethane	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	Trichloroethene	6.2	J	BOP-88I-1116	Analyzed outside hold time
1730794	1,1,2,2-Tetrachloroethane	0.4 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	o-Xylene	1 U	UJ	BOP-88I-1116	Analyzed outside hold time
1730794	4-Methyl-2-pentanone	5 U	UJ	BOP-Y-1116	Low CCV recovery
1730794	2-Hexanone	5 U	UJ	BOP-Y-1116	Low CCV recovery
1730794	Acetone	5 U	UJ	BOP-Y-1116	Low CCV recovery
1730794	2-Butanone/MEK	5 U	UJ	BOP-Y-1116	Low CCV recovery
1730794	Trichloroethene	160	J	BOP-Y-1116	High field duplicate RPD
1732119	Nitrate	0.10 U	DNR	BOP-76I-1116	Do not report; use reanalysis results
1732119	Nitrate	0.10 U	UJ	BOP-76I-1116 (RE)	Analyzed outside hold time
1732119	Nitrate	0.12	DNR	BOP-77I-1116	Do not report; use reanalysis results
1732119	Nitrate	0.13	J	BOP-77I-1116 (RE)	Analyzed outside hold time
1732119	4-Methyl-2-pentanone	5 U	UJ	BOP-72I-1116	Low CCV recovery
1732119	2-Hexanone	5 U	UJ	BOP-72I-1116	Low CCV recovery
1732119	Acetone	12	J	BOP-72I-1116	Low CCV recovery
1732119	2-Butanone/MEK	14	J	BOP-72I-1116	Low CCV recovery
1732119	4-Methyl-2-pentanone	5 U	UJ	BOP-73I-1116	Low CCV recovery
1732119	2-Hexanone	5 U	UJ	BOP-73I-1116	Low CCV recovery
1732119	Acetone	10	J	BOP-73I-1116	Low CCV recovery
1732119	2-Butanone/MEK	5 U	UJ	BOP-73I-1116	Low CCV recovery
1732119	4-Methyl-2-pentanone	5 U	UJ	BOP-74I-1116	Low CCV recovery
1732119	2-Hexanone	5 U	UJ	BOP-74I-1116	Low CCV recovery

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1732119	Acetone	21	J	BOP-74I-1116	Low CCV recovery
1732119	2-Butanone/MEK	36	J	BOP-74I-1116	Low CCV recovery
1732119	4-Methyl-2-pentanone	5 U	UJ	BOP-76I-1116	Low CCV recovery
1732119	2-Hexanone	5 U	UJ	BOP-76I-1116	Low CCV recovery
1732119	Acetone	33	J	BOP-76I-1116	Low CCV recovery
1732119	2-Butanone/MEK	5 U	UJ	BOP-76I-1116	Low CCV recovery
1732119	4-Methyl-2-pentanone	5 U	UJ	BOP-77I-1116	Low CCV recovery
1732119	2-Hexanone	9.6	J	BOP-77I-1116	Low CCV recovery
1732119	Acetone	77	J	BOP-77I-1116	Low CCV recovery
1732119	2-Butanone/MEK	60	J	BOP-77I-1116	Low CCV recovery; low LCS/LCSD recovery
1732377	4-Methyl-2-pentanone	5 U	UJ	BOP-80I-1116	Low CCV recovery
1732377	2-Hexanone	5 U	UJ	BOP-80I-1116	Low CCV recovery
1732377	Acetone	9.2	J	BOP-80I-1116	Low CCV recovery
1732377	2-Butanone/MEK	5 U	UJ	BOP-80I-1116	Low CCV recovery
1732377	4-Methyl-2-pentanone	5 U	UJ	BOP-81I-1116	Low CCV recovery
1732377	2-Hexanone	5 U	UJ	BOP-81I-1116	Low CCV recovery
1732377	Acetone	22	J	BOP-81I-1116	Low CCV recovery
1732377	2-Butanone/MEK	5 U	UJ	BOP-81I-1116	Low CCV recovery
1734526	4-Methyl-2-pentanone	5 U	UJ	BOP-07D(148)-1116	Low CCV recovery
1734526	2-Hexanone	5 U	UJ	BOP-07D(148)-1116	Low CCV recovery; low LCS/LCSD recovery
1734526	Vinyl Chloride	1.1	J	BOP-07D(148)-1116	High CCV recovery
1734526	2-Butanone/MEK	5 U	UJ	BOP-07D(148)-1116	Low CCV recovery
1734526	4-Methyl-2-pentanone	5 U	UJ	BOP-07D(155)-1116	Low CCV recovery
1734526	2-Hexanone	5 U	UJ	BOP-07D(155)-1116	Low CCV recovery; low LCS/LCSD recovery
1734526	Vinyl Chloride	1.1	J	BOP-07D(155)-1116	High CCV recovery
1734526	2-Butanone/MEK	5 U	UJ	BOP-07D(155)-1116	Low CCV recovery
1734526	4-Methyl-2-pentanone	5 U	UJ	BOP-82I-1116	Low CCV recovery
1734526	2-Hexanone	5 U	UJ	BOP-82I-1116	Low CCV recovery; low LCS/LCSD recovery
1734526	2-Butanone/MEK	5 U	UJ	BOP-82I-1116	Low CCV recovery
1734526	4-Methyl-2-pentanone	5 U	UJ	BOP-83I-1116	Low CCV recovery
1734526	2-Hexanone	5 U	UJ	BOP-83I-1116	Low CCV recovery; low LCS/LCSD recovery
1734526	2-Butanone/MEK	5 U	UJ	BOP-83I-1116	Low CCV recovery
1611211	Vinyl Chloride	2.5 U	UJ	SVE-Gac1-1116	Potential low bias (ambient cannister pressure)
1611211	1,1-Dichloroethene	3.9 U	UJ	SVE-Gac1-1116	Potential low bias (ambient cannister pressure)
1611211	1,1,1-Trichloroethane	10	J	SVE-Gac1-1116	Potential low bias (ambient cannister pressure)
1611211	cis-1,2-Dichloroethene	3.9 U	UJ	SVE-Gac1-1116	Potential low bias (ambient cannister pressure)
1611211	Trichloroethene	240	J	SVE-Gac1-1116	Potential low bias (ambient cannister pressure)
1611211	Tetrachloroethene	68	J	SVE-Gac1-1116	Potential low bias (ambient cannister pressure)

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

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11/23/2016
Ms. Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue South

Edmonds WA 98020

Project Name: Boeing of Portland
Project #: 025116.116.412
Workorder #: 1611211

Dear Ms. Chris Kimmel

The following report includes the data for the above referenced project for sample(s) received on 11/11/2016 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1611211

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	11/11/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	11/23/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SVE-Inf-1116	TO-15	4.7 "Hg	15 psi
02A	SVE-Gac1-1116	TO-15	0.3 psi	14.9 psi
03A	SVE-Eff-1116	TO-15	4.7 "Hg	14.9 psi
04A	BOP-78i-1116	TO-15	3.9 "Hg	15.1 psi
05A	BOP-79i-1116	TO-15	4.1 "Hg	14.8 psi
06A	BOP-84i-1116	TO-15	4.7 "Hg	15 psi
07A	BOP-85i-1116	TO-15	5.7 "Hg	14.9 psi
08A	BOP-86i-1116	TO-15	6.1 "Hg	14.5 psi
09A	BOP-87i-1116	TO-15	3.7 "Hg	15.5 psi
10A	BOP-88i-1116	TO-15	6.7 "Hg	15.1 psi
11A	VOW-16-1116	TO-15	5.9 "Hg	14.9 psi
12A	VOW-17-1116	TO-15	4.7 "Hg	15.1 psi
13A	VOW-18-1116	TO-15	4.1 "Hg	15.2 psi
14A	VP-1-1116	TO-15	4.5 "Hg	14.9 psi
15A	VP-2-1116	TO-15	2.2 "Hg	15.3 psi
16A	VP-3-1116	TO-15	0.6 "Hg	15 psi
17A	VP-4-1116	TO-15	1 "Hg	14.8 psi
18A	VP-5-1116	TO-15	3.5 "Hg	15.3 psi
19A	VP-6-1116	TO-15	3.3 "Hg	15.2 psi
20A	VP-7-1116	TO-15	4.3 "Hg	15.3 psi
21A	VP-9-1116	TO-15	3.5 "Hg	15 psi
22A	Lab Blank	TO-15	NA	NA
22B	Lab Blank	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1611211

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	11/11/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	11/23/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
23A	CCV	TO-15	NA	NA
23B	CCV	TO-15	NA	NA
24A	LCS	TO-15	NA	NA
24AA	LCSD	TO-15	NA	NA
24B	LCS	TO-15	NA	NA
24BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 11/23/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Landau Associates, Inc.
Workorder# 1611211

Twenty-one 1 Liter Summa Canister samples were received on November 11, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuum for sample SVE-Gac1-1116 was measured at ambient pressure. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVE-Inf-1116

Lab ID#: 1611211-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	1.2	6.5	6.6
Trichloroethene	1.2	41	6.4	220
Tetrachloroethene	1.2	14	8.1	98

Client Sample ID: SVE-Gac1-1116

Lab ID#: 1611211-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	0.98	1.9	5.4	10
Trichloroethene	0.98	45	5.3	240
Tetrachloroethene	0.98	10	6.7	68

Client Sample ID: SVE-Eff-1116

Lab ID#: 1611211-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	1.2	8.9	4.7	35
Trichloroethene	1.2	2.3	6.4	12
Tetrachloroethene	1.2	10	8.1	68

Client Sample ID: BOP-78i-1116

Lab ID#: 1611211-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	11	6.3	61
Tetrachloroethene	1.2	13	7.9	86

Client Sample ID: BOP-79i-1116

Lab ID#: 1611211-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	7.6	7.9	52

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: BOP-84i-1116

Lab ID#: 1611211-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	6.0	6.4	32
Tetrachloroethene	1.2	4.7	8.1	32

Client Sample ID: BOP-85i-1116

Lab ID#: 1611211-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	2.1	6.7	11
Tetrachloroethene	1.2	28	8.4	190

Client Sample ID: BOP-86i-1116

Lab ID#: 1611211-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	5.2	6.7	28
Tetrachloroethene	1.2	16	8.4	100

Client Sample ID: BOP-87i-1116

Lab ID#: 1611211-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.2	1.3	6.4	7.2
Trichloroethene	1.2	43	6.3	230
Tetrachloroethene	1.2	19	7.9	130

Client Sample ID: BOP-88i-1116

Lab ID#: 1611211-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.3	2.2	7.1	12
Trichloroethene	1.3	12	7.0	65
Tetrachloroethene	1.3	11	8.8	73

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VOW-16-1116

Lab ID#: 1611211-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	9.4	8.5	64

Client Sample ID: VOW-17-1116

Lab ID#: 1611211-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	3.1	6.4	17
Tetrachloroethene	1.2	3.2	8.1	22

Client Sample ID: VOW-18-1116

Lab ID#: 1611211-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	12	8.0	82

Client Sample ID: VP-1-1116

Lab ID#: 1611211-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	2.6	8.0	18

Client Sample ID: VP-2-1116

Lab ID#: 1611211-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	3.8	5.9	20
Tetrachloroethene	1.1	2.6	7.5	17

Client Sample ID: VP-3-1116

Lab ID#: 1611211-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-3-1116

Lab ID#: 1611211-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.0	2.1	5.6	11
Trichloroethene	1.0	1.1	5.5	6.2
Tetrachloroethene	1.0	3.9	7.0	26

Client Sample ID: VP-4-1116

Lab ID#: 1611211-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	3.6	5.6	19
Tetrachloroethene	1.0	2.6	7.0	18

Client Sample ID: VP-5-1116

Lab ID#: 1611211-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	2.1	6.2	12
Tetrachloroethene	1.2	2.7	7.8	18

Client Sample ID: VP-6-1116

Lab ID#: 1611211-19A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	1.1	1.4	6.2	7.6
Tetrachloroethene	1.1	7.9	7.7	54

Client Sample ID: VP-7-1116

Lab ID#: 1611211-20A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.2	4.9	4.7	20
1,1,1-Trichloroethane	1.2	110	6.5	600
cis-1,2-Dichloroethene	1.2	4.4	4.7	18

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-7-1116

Lab ID#: 1611211-20A

Trichloroethene	1.2	9.5	6.4	51
Tetrachloroethene	1.2	9.4	8.1	64

Client Sample ID: VP-9-1116

Lab ID#: 1611211-21A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	6.8	6.2	36
Tetrachloroethene	1.1	4.2	7.8	28

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Client Sample ID: SVE-Inf-1116

Lab ID#: 1611211-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112006**	**Date of Collection: 11/8/16 9:05:00 AM**	
Dil. Factor:	**2.40**	**Date of Analysis: 11/20/16 12:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	1.2	6.5	6.6
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	41	6.4	220
Tetrachloroethene	1.2	14	8.1	98

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SVE-Gac1-1116

Lab ID#: 1611211-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112007**	**Date of Collection: 11/8/16 9:15:00 AM**	
Dil. Factor:	**1.97**	**Date of Analysis: 11/20/16 12:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.98	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.98	Not Detected	3.9	Not Detected
1,1,1-Trichloroethane	0.98	1.9	5.4	10
cis-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Trichloroethene	0.98	45	5.3	240
Tetrachloroethene	0.98	10	6.7	68

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: SVE-Eff-1116

Lab ID#: 1611211-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112008**	**Date of Collection: 11/8/16 9:28:00 AM**	
Dil. Factor:	**2.39**	**Date of Analysis: 11/20/16 01:01 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
cis-1,2-Dichloroethene	1.2	8.9	4.7	35
Trichloroethene	1.2	2.3	6.4	12
Tetrachloroethene	1.2	10	8.1	68

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BOP-78i-1116

Lab ID#: 1611211-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112009**	**Date of Collection: 11/9/16 1:50:00 PM**	
Dil. Factor:	**2.33**	**Date of Analysis: 11/20/16 01:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	11	6.3	61
Tetrachloroethene	1.2	13	7.9	86

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: BOP-79i-1116

Lab ID#: 1611211-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112010**	**Date of Collection: 11/9/16 1:38:00 PM**	
Dil. Factor:	**2.32**	**Date of Analysis: 11/20/16 01:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.3	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	Not Detected	6.2	Not Detected
Tetrachloroethene	1.2	7.6	7.9	52

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: BOP-84i-1116

Lab ID#: 1611211-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112011**	**Date of Collection:**	**11/9/16 1:00:00 PM**
Dil. Factor:	**2.40**	**Date of Analysis:**	**11/20/16 02:26 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	6.0	6.4	32
Tetrachloroethene	1.2	4.7	8.1	32

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: BOP-85i-1116

Lab ID#: 1611211-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112012**	**Date of Collection:**	**11/9/16 10:52:00 AM**
Dil. Factor:	**2.48**	**Date of Analysis:**	**11/20/16 02:55 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.8	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	2.1	6.7	11
Tetrachloroethene	1.2	28	8.4	190

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: BOP-86i-1116

Lab ID#: 1611211-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112013**	**Date of Collection:**	**11/9/16 10:34:00 AM**
Dil. Factor:	**2.49**	**Date of Analysis:**	**11/20/16 03:23 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.8	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	5.2	6.7	28
Tetrachloroethene	1.2	16	8.4	100

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: BOP-87i-1116

Lab ID#: 1611211-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112014**	**Date of Collection:**	**11/9/16 11:02:00 AM**
Dil. Factor:	**2.34**	**Date of Analysis:**	**11/20/16 03:51 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	1.3	6.4	7.2
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	43	6.3	230
Tetrachloroethene	1.2	19	7.9	130

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: BOP-88i-1116

Lab ID#: 1611211-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112015**	**Date of Collection: 11/9/16 11:16:00 AM**	
Dil. Factor:	**2.61**	**Date of Analysis: 11/20/16 04:20 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.2	Not Detected
1,1,1-Trichloroethane	1.3	2.2	7.1	12
cis-1,2-Dichloroethene	1.3	Not Detected	5.2	Not Detected
Trichloroethene	1.3	12	7.0	65
Tetrachloroethene	1.3	11	8.8	73

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: VOW-16-1116

Lab ID#: 1611211-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112016**	**Date of Collection: 11/9/16 1:27:00 PM**	
Dil. Factor:	**2.51**	**Date of Analysis: 11/20/16 04:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.8	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	5.0	Not Detected
Trichloroethene	1.2	Not Detected	6.7	Not Detected
Tetrachloroethene	1.2	9.4	8.5	64

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: VOW-17-1116

Lab ID#: 1611211-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112017**	**Date of Collection: 11/9/16 3:30:00 PM**	
Dil. Factor:	**2.40**	**Date of Analysis: 11/20/16 05:17 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	3.1	6.4	17
Tetrachloroethene	1.2	3.2	8.1	22

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: VOW-18-1116

Lab ID#: 1611211-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112009**	**Date of Collection: 11/9/16 10:22:00 AM**	
Dil. Factor:	**2.36**	**Date of Analysis: 11/20/16 01:15 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Trichloroethene	1.2	Not Detected	6.3	Not Detected
Tetrachloroethene	1.2	12	8.0	82

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: VP-1-1116

Lab ID#: 1611211-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112010**	**Date of Collection: 11/9/16 3:34:00 PM**	
Dil. Factor:	**2.37**	**Date of Analysis: 11/20/16 01:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Trichloroethene	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	2.6	8.0	18

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: VP-2-1116

Lab ID#: 1611211-15A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112011**	**Date of Collection: 11/9/16 3:18:00 PM**	
Dil. Factor:	**2.20**	**Date of Analysis: 11/20/16 02:09 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	3.8	5.9	20
Tetrachloroethene	1.1	2.6	7.5	17

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: VP-3-1116

Lab ID#: 1611211-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112012**	**Date of Collection: 11/9/16 3:16:00 PM**	
Dil. Factor:	**2.06**	**Date of Analysis: 11/20/16 02:35 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
1,1,1-Trichloroethane	1.0	2.1	5.6	11
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	1.1	5.5	6.2
Tetrachloroethene	1.0	3.9	7.0	26

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: VP-4-1116

Lab ID#: 1611211-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112013**	**Date of Collection: 11/9/16 2:10:00 PM**	
Dil. Factor:	**2.08**	**Date of Analysis: 11/20/16 03:02 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.7	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	3.6	5.6	19
Tetrachloroethene	1.0	2.6	7.0	18

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: VP-5-1116

Lab ID#: 1611211-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112014**	**Date of Collection: 11/9/16 10:04:00 AM**	
Dil. Factor:	**2.31**	**Date of Analysis: 11/20/16 03:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.3	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	2.1	6.2	12
Tetrachloroethene	1.2	2.7	7.8	18

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: VP-6-1116

Lab ID#: 1611211-19A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112015**	**Date of Collection: 11/9/16 10:08:00 AM**	
Dil. Factor:	**2.28**	**Date of Analysis: 11/20/16 03:55 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	1.4	6.2	7.6
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	Not Detected	6.1	Not Detected
Tetrachloroethene	1.1	7.9	7.7	54

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: VP-7-1116

Lab ID#: 1611211-20A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112016**	**Date of Collection: 11/9/16 11:28:00 AM**	
Dil. Factor:	**2.38**	**Date of Analysis: 11/20/16 04:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	4.9	4.7	20
1,1,1-Trichloroethane	1.2	110	6.5	600
cis-1,2-Dichloroethene	1.2	4.4	4.7	18
Trichloroethene	1.2	9.5	6.4	51
Tetrachloroethene	1.2	9.4	8.1	64

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: VP-9-1116

Lab ID#: 1611211-21A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112017**	**Date of Collection: 11/9/16 2:08:00 PM**	
Dil. Factor:	**2.29**	**Date of Analysis: 11/20/16 04:49 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.2	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	6.8	6.2	36
Tetrachloroethene	1.1	4.2	7.8	28

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1611211-22A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112005**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 10:13 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1611211-22B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112005**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 10:11 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: CCV

Lab ID#: 1611211-23A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 08:35 AM**	

Compound	%Recovery
Vinyl Chloride	96
1,1-Dichloroethene	98
1,1,1-Trichloroethane	98
cis-1,2-Dichloroethene	102
Trichloroethene	103
Tetrachloroethene	97

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 1611211-23B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 08:43 AM**	

Compound	**%Recovery**
Vinyl Chloride	82
1,1-Dichloroethene	89
1,1,1-Trichloroethane	88
cis-1,2-Dichloroethene	94
Trichloroethene	86
Tetrachloroethene	80

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: LCS

Lab ID#: 1611211-24A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 09:02 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	102	70-130
1,1-Dichloroethene	98	70-130
1,1,1-Trichloroethane	100	70-130
cis-1,2-Dichloroethene	94	70-130
Trichloroethene	105	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1611211-24AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17112004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 09:29 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	103	70-130
1,1-Dichloroethene	98	70-130
1,1,1-Trichloroethane	100	70-130
cis-1,2-Dichloroethene	96	70-130
Trichloroethene	105	70-130
Tetrachloroethene	100	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1611211-24B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 09:08 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	87	70-130
1,1-Dichloroethene	91	70-130
1,1,1-Trichloroethane	92	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	93	70-130
Tetrachloroethene	81	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 1611211-24BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/20/16 09:33 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	85	70-130
1,1-Dichloroethene	91	70-130
1,1,1-Trichloroethane	92	70-130
cis-1,2-Dichloroethene	86	70-130
Trichloroethene	90	70-130
Tetrachloroethene	82	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	106	70-130

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmel
Collected by: (Print and Sign) Erin Waibel E Waibel
Company Landau Associates Email CKimmel@landauinc.com
Address 333 SW 5th Ave #700 City Portland State OR Zip 97204
Phone 5035421080 Fax 5035421081

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01a	SVE-Inf-1116	2117	11/8/16	0905	TO-15 (6 list)	28	5		
02a	SVE-GAC1-1116	37857	11/8/16	0915	↓	30	2		
03a	SVE-Eff-1116	36387	11/8/16	0928		25	4		
04a	BOP-78i-1116	13391	11/9/16	1350		30	5		
05a	BOP-79i-1116	IL1732	11/9/16	1338		30	5		
06a	BOP-84i-1116	IL1510	11/9/16	1300		29	5		
07a	BOP-85i-1116	IL1584	11/9/16	1052		28	5		
08a	BOP-86i-1116	00226	11/9/16	1034		27	5		
09a	BOP-87i-1116	00218	11/9/16	1102		30	5		
10a	BOP-88i-1116	37786	11/9/16	1116		26	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Waibel	11/9/16 1700	FedEx	11/11/16 1245
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No (None)	161211

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Project Manager Chris Kimmel
Collected by: (Print and Sign) E Waibel Erin Waibel
Company Landau Associates Email CKimmel@landauinc.com
Address 333 SW 5th Ave #700 City Portland State OR Zip 97204
Phone 5035421080 Fax 5035421081

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
11a	VOW-16-1116	IL2736	11/9/16	1327	TO-15 (6 list)	27	5		
12a	VOW-17-1116	2070	11/9/16	1530	↓	26	4		
13a	VOW-18-1116	3827	11/9/16	1022		28	5		
14a	VP-1-1116	IL1954	11/9/16	1534		29	5		
15a	VP-2-1116	IL1792	11/9/16	1518		30	5		
16a	VP-3-1116	2077	11/9/16	1516		30	5		
17a	VP-4-1116	00707	11/9/16	1410		30	5		
18a	VP-5-1116	3052	11/9/16	1004		30	5		
19a	VP-6-1116	15724	11/9/16	1008		30	5		
20a	VP-7-1116	IL1745	11/9/16	1128		29	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Waibel	11/9/16 1700	[illegible]	11/11/16 1745

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No (None)	1611211

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Sample Transportation Notice
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Project Manager Chris Kimmel
Collected by: (Print and Sign) Erin Waibel E Waibel
Company Landau Associates Email ckimmel@landauinc.com
Address 333 SW 5th Ave #700 City Portland State OR Zip 97204
Phone 5035421080 Fax ~~97~~ 5035421081

Project Info:
P.O. # 025116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
21a	VP-9-1116	37829	11/9/16	1408	TO-15 (6 list)	29	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
E Waibel	11/9/16 1700	ZMEHL	11/11/16 1245
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No None	1611211

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12/1/2016

Ms. Chris Kimmel

Landau Associates, Inc.

130 2nd Avenue South

Edmonds WA 98020

Project Name: Boeing of Portland

Project #: 025116.116.412

Workorder #: 1611377

Dear Ms. Chris Kimmel

The following report includes the data for the above referenced project for sample(s) received on 11/17/2016 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1611377

Work Order Summary

CLIENT:	Ms. Chris Kimmel Landau Associates, Inc. 130 2nd Avenue South Edmonds, WA 98020	**BILL TO:**	Robert Large Eurofins Lancaster Laboratories Environmental, LLC 2425 New Holland Pike Lancaster, PA 17605-2425
PHONE:	800-552-5957	**P.O. #**	025116.116.412
FAX:	425-778-6409	**PROJECT #**	025116.116.412 Boeing of Portland
DATE RECEIVED:	11/17/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/01/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-8R	TO-15	6.3 "Hg	15.1 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 12/01/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

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LABORATORY NARRATIVE
EPA Method TO-15
Landau Associates, Inc.
Workorder# 1611377

One 1 Liter Summa Canister sample was received on November 17, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-8R

Lab ID#: 1611377-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	1.3	4.9	5.1	20
1,1,1-Trichloroethane	1.3	98	7.0	530
cis-1,2-Dichloroethene	1.3	11	5.1	43
Trichloroethene	1.3	8.8	6.9	47
Tetrachloroethene	1.3	5.3	8.7	36

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Client Sample ID: VP-8R

Lab ID#: 1611377-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p112906**	**Date of Collection: 11/15/16 9:45:00 AM**	
Dil. Factor:	**2.57**	**Date of Analysis: 11/29/16 04:46 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,1-Dichloroethene	1.3	4.9	5.1	20
1,1,1-Trichloroethane	1.3	98	7.0	530
cis-1,2-Dichloroethene	1.3	11	5.1	43
Trichloroethene	1.3	8.8	6.9	47
Tetrachloroethene	1.3	5.3	8.7	36

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1611377-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p112905**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/16 11:40 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: CCV

Lab ID#: 1611377-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p112902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/16 09:59 AM**	

Compound	%Recovery
Vinyl Chloride	130
1,1-Dichloroethene	107
1,1,1-Trichloroethane	101
cis-1,2-Dichloroethene	106
Trichloroethene	109
Tetrachloroethene	107

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCS

Lab ID#: 1611377-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p112903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/16 10:24 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	126	70-130
1,1-Dichloroethene	103	70-130
1,1,1-Trichloroethane	99	70-130
cis-1,2-Dichloroethene	99	70-130
Trichloroethene	107	70-130
Tetrachloroethene	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCSD

Lab ID#: 1611377-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p112904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/16 10:49 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	131 Q	70-130
1,1-Dichloroethene	102	70-130
1,1,1-Trichloroethane	97	70-130
cis-1,2-Dichloroethene	98	70-130
Trichloroethene	108	70-130
Tetrachloroethene	104	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130

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(916) 985-1000 FAX (916) 985-1020

Project Manager Chris Kimmel
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Phone 5035421080 Fax 5035421081

Project Info:
P.O. # D25116.116.412
Project # 025116.116.412
Project Name Boeing of Portland

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
9A	VP-BR	1L2748	11/15/16	0945	TO-15 (6 List)	26	4		

Relinquished by: (signature) E Waibel Date/Time 11/15/16 1500
Received by: (signature) Andrea Augustin EMSL Date/Time 11/17/16 1515
Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time
Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		NA	Good	Yes No (None)	1611377

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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: November 22, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 11/08/2016
Group Number: 1730237
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
TowerInf-1116 Water	8684149
TowerInf-1116 Total Metals Water	8684150
TowerInf-1116 Dissolved Metals Water	8684151
TowerInD-1116 Water	8684152
TowerEff-1116 Water	8684153
TowerEff-1116 Total Metals Water	8684154
TowerEff-1116 Dissolved Metals Water	8684155
TowerEfD-1116 Water	8684156
Trip Blank Water	8684157

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	Attn: John Rusoff
Electronic Copy To	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1730237

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8684149, 8684152, 8684153, 8684156, 8684157

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Batch #: H163221AA (Sample number(s): 8684149, 8684152-8684153, 8684156-8684157)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 2-Hexanone

SW-846 6010C, Metals

Batch #: 163160635004 (Sample number(s): 8684154-8684155 UNSPK: P690208 BKG: P690208)

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

SW-846 6010C, Metals Dissolved

Batch #: 163160635004 (Sample number(s): 8684154-8684155 UNSPK: P690208 BKG: P690208)

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

EPA 300.0, Wet Chemistry

Batch #: 16313987901A (Sample number(s): 8684153 UNSPK: P8684153-P684537 BKG: P8684153-P684537)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Nitrate Nitrogen

EPA 365.1, Wet Chemistry

Batch #: 16322110102A (Sample number(s): 8684153 UNSPK: P688628 BKG: P688628)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Phosphorus as PO4 water

SM 5310 C-2000, Wet Chemistry

Batch #: 16314667605A (Sample number(s): 8684149, 8684153 UNSPK: P683904 BKG: P683904)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

SM 4500-NH3 D-1997, Wet Chemistry

Batch #: 16320010201A (Sample number(s): 8684153 UNSPK: P684989 BKG: P684989)

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

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Ammonia-Nitrogen

Sample Description: TowerInf-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684149
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 10:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWIN

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.6**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**12**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: TowerInf-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684149
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 10:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWIN

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-butanone	-32				
	4-methyl-2-pentanone	-32				
	2-hexanone	-35				

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Wet Chemistry	**EPA 300.0**		mg/l		mg/l	
00228	**Sulfate**	14808-79-8	**10.1**		1.0	1
	SM 5310 C-2000		mg/l		mg/l	
00273	**Total Organic Carbon**	n.a.	**1.5**		1.0	1
	EPA 376.1		mg/l		mg/l	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 15:33	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 15:33	Kerri E Legerlotz	1
00228	Sulfate	EPA 300.0	1	16322120151A	11/17/2016 16:32	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605A	11/09/2016 16:56	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16316133301A	11/11/2016 10:06	Satchel MacClintic	1

Sample Description: TowerInf-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684150
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 10:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163200635001	11/16/2016 21:45	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163200635001	11/16/2016 05:26	James L Mertz	1

Sample Description: TowerInf-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684151
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 10:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163200635001	11/16/2016 22:03	Cindy M Gehman	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163200635001	11/16/2016 05:26	James L Mertz	1

Sample Description: TowerInD-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684152
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:00 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWID

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.1**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.7**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.7**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**11**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: TowerInD-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684152
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:00 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWID

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-butanone		-32		
	4-methyl-2-pentanone		-32		
	2-hexanone		-35		

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 15:53	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 15:53	Kerri E Legerlotz	1

Sample Description: TowerEff-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684153
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32

Sample Description: TowerEff-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684153
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWEF

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	4-methyl-2-pentanone -32					
	2-hexanone -35					

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.1**		0.10	1
01506	Nitrite Nitrogen	14797-65-0	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**8.8**		1.0	1
	EPA 365.1		**mg/l**		**mg/l**	
00345	Total Phosphorus as PO4 water	14265-44-2	0.31	U	0.31	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.1**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1
	SM 4500-NH3 D-1997		**mg/l**		**mg/l**	
12677	Ammonia-Nitrogen	7664-41-7	0.20	U	0.20	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 16:14	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 16:14	Kerri E Legerlotz	1
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/08/2016 23:11	Clinton M Wilson	1
01506	Nitrite Nitrogen	EPA 300.0	1	16313987901A	11/08/2016 23:11	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/08/2016 23:11	Clinton M Wilson	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	16322110102A	11/18/2016 22:35	Samuel J Weaver	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605A	11/09/2016 17:10	Drew M Gerhart	1

Sample Description: TowerEff-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684153
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWEF

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	16322110102A	11/17/2016 14:22	Nikasia Nowell	1
01333	Sulfide	EPA 376.1	1	16316133301A	11/11/2016 10:06	Satchel MacClintic	1
12677	Ammonia-Nitrogen	SM 4500-NH3 D-1997	1	16320010201A	11/16/2016 00:50	Michelle L Lalli	1

Sample Description: TowerEff-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684154
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:13	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: TowerEff-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684155
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

This sample was filtered in the lab 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
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:16	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: TowerEfD-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684156
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWED

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32

Sample Description: TowerEfD-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684156
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 11:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWED

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 16:34	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 16:34	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684157
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016

The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWTB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

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The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684157
LL Group # 1730237
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016

The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/22/2016 14:29

TOWTB

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 12:30	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 12:30	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/22/2016 14:29

Group Number: 1730237

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: H163221AA	Sample number(s): 8684149,8684152-8684153,8684156-8684157		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

*- 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: 11/22/2016 14:29

Group Number: 1730237

Method Blank (continued)

Analysis Name	Result		LOQ
	mg/l		mg/l
Batch number: 163160635004	Sample number(s): 8684154-8684155		
Iron	0.400	U	0.400
Batch number: 163200635001	Sample number(s): 8684150-8684151		
Iron	0.400	U	0.400
Batch number: 16313987901A	Sample number(s): 8684153		
Nitrate Nitrogen	0.10	U	0.10
Nitrite Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16314667605A	Sample number(s): 8684149,8684153		
Total Organic Carbon	1.0	U	1.0
Batch number: 16322110102A	Sample number(s): 8684153		
Total Phosphorus as PO4 water	0.31	U	0.31
Batch number: 16322120151A	Sample number(s): 8684149		
Sulfate	1.0	U	1.0
Batch number: 16316133301A	Sample number(s): 8684149,8684153		
Sulfide	2.0	U	2.0
Batch number: 16320010201A	Sample number(s): 8684153		
Ammonia-Nitrogen	0.20	U	0.20

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: H163221AA	Sample number(s): 8684149,8684152-8684153,8684156-8684157								
Acetone	37.5	32.54	37.5	29.95	87	80	65-130	8	30
Benzene	5.00	5.41	5.00	5.22	108	104	80-120	3	30
Bromodichloromethane	5.00	5.18	5.00	5.09	104	102	80-120	2	30
Bromoform	5.00	4.82	5.00	4.87	96	97	62-128	1	30
Bromomethane	5.00	4.21	5.00	4.01	84	80	62-131	5	30
2-Butanone	37.5	34.08	37.5	28.64	91	76	66-135	17	30
Carbon Disulfide	5.00	5.37	5.00	5.13	107	103	65-120	5	30
Carbon Tetrachloride	5.00	5.25	5.00	4.99	105	100	79-124	5	30
Chlorobenzene	5.00	5.50	5.00	5.29	110	106	80-120	4	30
Chloroethane	5.00	4.15	5.00	4.01	83	80	63-125	3	30
Chloroform	5.00	5.01	5.00	4.92	100	98	80-120	2	30
Chloromethane	5.00	3.54	5.00	3.41	71	68	55-126	4	30
Dibromochloromethane	5.00	5.19	5.00	5.21	104	104	78-127	0	30
1,1-Dichloroethane	5.00	5.31	5.00	5.09	106	102	75-120	4	30
1,2-Dichloroethane	5.00	4.75	5.00	4.75	95	95	72-127	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: 11/22/2016 14:29

Group Number: 1730237

LCS/LCSD (continued)

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					
1,1-Dichloroethene	5.00	5.43	5.00	5.42	109	108	76-120	0	30
cis-1,2-Dichloroethene	5.00	5.34	5.00	5.14	107	103	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.51	5.00	5.27	110	105	80-120	4	30
1,2-Dichloropropane	5.00	5.37	5.00	5.22	107	104	80-120	3	30
cis-1,3-Dichloropropene	5.00	5.23	5.00	5.14	105	103	80-124	2	30
trans-1,3-Dichloropropene	5.00	5.56	5.00	5.44	111	109	77-121	2	30
Ethylbenzene	5.00	5.50	5.00	5.25	110	105	80-120	5	30
2-Hexanone	25	21.55	25	17.14	86	69*	73-128	23	30
4-Methyl-2-pentanone	25	22.72	25	17.67	91	71	71-129	25	30
Methylene Chloride	5.00	5.30	5.00	5.30	106	106	80-120	0	30
Styrene	5.00	5.67	5.00	5.56	113	111	80-120	2	30
1,1,2,2-Tetrachloroethane	5.00	5.40	5.00	5.46	108	109	75-123	1	30
Tetrachloroethene	5.00	5.44	5.00	5.06	109	101	80-120	7	30
Toluene	5.00	5.58	5.00	5.33	112	107	80-120	5	30
112Trichloro122Trifluoroethane	5.00	5.44	5.00	5.20	109	104	75-120	5	30
1,1,1-Trichloroethane	5.00	5.07	5.00	4.78	101	96	79-120	6	30
1,1,2-Trichloroethane	5.00	5.38	5.00	5.23	108	105	80-120	3	30
Trichloroethene	5.00	5.41	5.00	5.19	108	104	80-120	4	30
Trichlorofluoromethane	5.00	4.40	5.00	4.12	88	82	71-131	7	30
Vinyl Acetate	12.5	12.3	12.5	12.44	98	100	63-122	1	30
Vinyl Chloride	5.00	3.96	5.00	3.81	79	76	62-128	4	30
m+p-Xylene	10	11.21	10	10.65	112	107	80-120	5	30
o-Xylene	5.00	5.43	5.00	5.18	109	104	80-120	5	30
	mg/l	mg/l	mg/l	mg/l					
Batch number: 163160635004	Sample number(s): 8684154-8684155								
Iron	1.00	1.01			101		80-120		
Batch number: 163200635001	Sample number(s): 8684150-8684151								
Iron	1.00	1.02			102		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16313987901A	Sample number(s): 8684153								
Nitrate Nitrogen	0.750	0.750			100		90-110		
Nitrite Nitrogen	0.750	0.703			94		90-110		
Sulfate	7.50	7.35			98		90-110		
Batch number: 16314667605A	Sample number(s): 8684149,8684153								
Total Organic Carbon	25	24.65			99		91-113		
Batch number: 16322110102A	Sample number(s): 8684153								
Total Phosphorus as PO4 water	14.92	15.29			102		90-110		
Batch number: 16322120151A	Sample number(s): 8684149								
Sulfate	7.50	7.45			99		90-110		

*- 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: 11/22/2016 14:29

Group Number: 1730237

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: 16316133301A	Sample number(s): 8684149,8684153								
Sulfide	20	20.73	20	20.52	104	103	80-120	1	4
Batch number: 16320010201A	Sample number(s): 8684153								
Ammonia-Nitrogen	5.00	5.26			105		78-128		

MS/MSD

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: 163160635004	Sample number(s): 8684154-8684155 UNSPK: P690208									
Iron	10.42	1.00	11.68	1.00	11.89	126 (2)	147 (2)	75-125	2	20
Batch number: 163200635001	Sample number(s): 8684150-8684151 UNSPK: 8684150									
Iron	0.370	1.00	1.39	1.00	1.42	102	105	75-125	2	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16313987901A	Sample number(s): 8684153 UNSPK: 8684153									
Nitrate Nitrogen	2.10	1.00	3.24			114*		90-110		
Nitrite Nitrogen	0.10 U	1.00	0.958			96		90-110		
Sulfate	8.81	10	19.82			110		90-110		
Batch number: 16314667605A	Sample number(s): 8684149,8684153 UNSPK: P683904									
Total Organic Carbon	80.95	10	87.61			67 (2)		91-113		
Batch number: 16322110102A	Sample number(s): 8684153 UNSPK: P688628									
Total Phosphorus as PO4 water	0.31 U	6.14	3.00			49*		90-110		
Batch number: 16322120151A	Sample number(s): 8684149 UNSPK: P697170									
Sulfate	128.25	200	343.58			108		90-110		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16320010201A	Sample number(s): 8684153 UNSPK: P684989									
Ammonia-Nitrogen	0.20 U	5.00	4.67	5.00	5.58	93	112	78-128	18*	15

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Quality Control Summary

Client Name: The Boeing Company
Reported: 11/22/2016 14:29

Group Number: 1730237

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 163160635004	Sample number(s): 8684154-8684155 BKG: P690208			
Iron	10.42	10.91	5	20
Batch number: 163200635001	Sample number(s): 8684150-8684151 BKG: 8684150			
Iron	0.370	0.379	2 (1)	20
	mg/l	mg/l		
Batch number: 16313987901A	Sample number(s): 8684153 BKG: 8684153			
Nitrate Nitrogen	2.10	2.12	1	15
Nitrite Nitrogen	0.10 U	0.10 U	0 (1)	15
Sulfate	8.81	8.73	1	15
Batch number: 16314667605A	Sample number(s): 8684149,8684153 BKG: P683904			
Total Organic Carbon	80.95	79.76	1	3
Batch number: 16322110102A	Sample number(s): 8684153 BKG: P688628			
Total Phosphorus as PO4 water	0.31 U	0.31 U	0 (1)	4
Batch number: 16322120151A	Sample number(s): 8684149 BKG: P697170			
Sulfate	128.25	133.24	4	15
	mg/l	mg/l		
Batch number: 16316133301A	Sample number(s): 8684149,8684153 BKG: P686464			
Sulfide	2.0 U	2.0 U	0 (1)	20
Batch number: 16320010201A	Sample number(s): 8684153 BKG: P684989			
Ammonia-Nitrogen	0.20 U	0.0600	200* (1)	20

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 Boeing 38
Batch number: H163221AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8684149	96	97	103	97
8684152	97	95	101	97
8684153	95	98	103	98
8684156	99	101	102	96
8684157	97	99	104	98
Blank	97	104	103	100
LCS	95	97	103	99
LCSD	96	96	104	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
Group Number: 1730237
Reported: 11/22/2016 14:29

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.

Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories Environmental

Acct. # 13419

For Eurofins Lancaster Laboratories Environmental use only
Group # 1730237 Sample # 8654149-57
Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, OR
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify): _____
Sampler: Emm # of Coolers: 2

4 Analyses Requested

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	VOC (38 List)	TOC	Sulfate	Sulfide	Total Iron	Dissolved Iron	Total Pas POU	Nitrite	Ammonia	Nitrate		
Tower Inf-1116	11/7/16	1050	H_2O	13	X	X	X	X	X	X						
Tower InD-1116	1	1100		3	X											
Tower EFF-1116				12	X	X	X	X	X	X	X	X	X	X		
Tower EFD-1116	↓	1120		3	X											
Trip Blanks	—	—	↓	2	X											

5 Remarks/Comments

Include John Rusoff

QC Iron @ Tower Inf-1116

Dissolved Iron @ Tower Eff is unpres. triple rinsed please filter.

Page 20 of 28

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

7

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	11/7/16 1700		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 11/8/16 1000

Relinquished by commercial carrier (circle): UPS FedEx Other: _____
Temperature upon Receipt: 1.1 °C
Custody Seals Intact?: Yes No -2

Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300

7063 0913

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be given to the SeaTac Courier. The pink copy should be retained by the client.

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 167521

Group Number(s): 1736237

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	11/08/2016 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:	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 Krista Abel (3058) at 10:52 on 11/08/2016

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	DT146	1.1	DT	Wet	Y	Bagged	N
2	DT146	2.2	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T: 717-656-2300
F: 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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:

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

Prepared for:

The Boeing Company

Report Date: November 21, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 11/08/2016
Group Number: 1730239
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-75i-1116 Water	8684180
BOP-78i-1116 Water	8684181
BOP-79i-1116 Water	8684182
BOP-84i-1116 Water	8684183
BOP-85i-1116 Water	8684184
BOP-86i-1116 Water	8684185
BOP-87i-1116 Water	8684186
BOP-x-1116 Water	8684187
E-2-1116 Water	8684188
E-2-1116 Total Metals Water	8684189
E-2-1116 Dissolved Metals Water	8684190
E-3-1116 Water	8684191
E-3-1116 Total Metals Water	8684192
E-3-1116 Dissolved Metals Water	8684193
E-4-1116 Water	8684194
E-4-1116 Total Metals Water	8684195
E-4-1116 Dissolved Metals Water	8684196
E-12-1116 Water	8684197
E-13-1116 Water	8684198
E-15-1116 Water	8684199
E-16-1116 Water	8684200
DP1-1116 Water	8684201
Trip Blank Water	8684202

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1730239

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8684199, 8684200, 8684201

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8684183

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-26%
Vinyl chloride	-21%
Acetone	-28%
2-Butanone	-32%
4-Methyl-2-pentanone	-32%
2-Hexanone	-35%

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
Vinyl chloride, 2-Butanone, 4-Methyl-2-pentanone, 2-Hexanone.
A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-Hexanone

Sample #s: 8684184

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-26%
Vinyl chloride	-21%
Acetone	-28%
2-Butanone	-32%
4-Methyl-2-pentanone	-32%
2-Hexanone	-35%

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
Vinyl chloride, 2-Butanone, 4-Methyl-2-pentanone.
A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-Hexanone

Sample #s: 8684194, 8684197, 8684198, 8684202

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample #s: 8684180

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
vinyl chloride and acetone.

Sample #s: 8684186

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
vinyl chloride, acetone, 2-butanone and 4-methyl-2-pentanone.

Sample #s: 8684181

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
vinyl chloride, acetone, 2-butanone, and 2-hexanone.

Sample #s: 8684182, 8684185

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
vinyl chloride, acetone, and 2-butanone.

Sample #s: 8684187, 8684188, 8684191

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
vinyl chloride.

Batch #: H163221AA (Sample number(s): 8684180-8684188, 8684191, 8684194, 8684197-8684198, 8684202)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 2-Hexanone

SW-846 6010C, Metals

Batch #: 163160635004 (Sample number(s): 8684189-8684190, 8684192-8684193, 8684195-8684196 UNSPK: P690208 BKG: P690208)

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

SW-846 6010C, Metals Dissolved

Batch #: 163160635004 (Sample number(s): 8684189-8684190, 8684192-8684193, 8684195-8684196 UNSPK: P690208 BKG: P690208)

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

EPA 300.0, Wet Chemistry

Batch #: 16313987901A (Sample number(s): 8684188, 8684191, 8684194, 8684197-8684200 UNSPK: P684153, P684537 BKG: P684153, P684537)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Nitrate Nitrogen

SM 5310 C-2000, Wet Chemistry

Batch #: 16314667605A (Sample number(s): 8684188, 8684191, 8684194, 8684197 UNSPK: P683904 BKG: P683904)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Total Organic Carbon

Batch #: 16314667605B (Sample number(s): 8684198-8684200 UNSPK: P683906 BKG: P683906)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Sample Description: BOP-75i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684180
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 15:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP75

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**14**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1.8**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.5**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**6.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.4**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: BOP-75i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684180
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 15:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP75

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-butanone	-32			
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: vinyl chloride and acetone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 12:50	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 12:50	Kerri E Legerlotz	1

Sample Description: BOP-78i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684181
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 12:45 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP78

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**45**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**83**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**3.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**12**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**7.6**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.4**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**7.5**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21

Sample Description: BOP-78i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684181
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 12:45 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP78

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	acetone	-28			
	2-butanone	-32			
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: vinyl chloride, acetone, 2-butanone, and 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 13:11	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 13:11	Kerri E Legerlotz	1

Sample Description: BOP-79i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684182
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 12:25 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP79

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**930**	**E**	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**350**	**E**	5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.6**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.7**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.4**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.7**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.7**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**1,200**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	**2-Butanone**	78-93-3	**410**		50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10

Sample Description: BOP-79i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684182
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 12:25 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP79

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.2**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	Trichloroethene	79-01-6	2.0	U	2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	**Vinyl Chloride**	75-01-4	**3.4**		2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below

Sample Description: BOP-79i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684182
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 12:25 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP79

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: vinyl chloride, acetone, and 2-butanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 14:52	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H163221AA	11/17/2016 15:13	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 14:52	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H163221AA	11/17/2016 15:13	Kerri E Legerlotz	10

Sample Description: BOP-84i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684183
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 13:15 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP84

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**220**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.7**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1.9**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**6.4**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.8**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.5**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-26%
Vinyl chloride	-21%

Sample Description: BOP-84i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684183
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 13:15 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP84

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	Acetone		-28%		
	2-Butanone		-32%		
	4-Methyl-2-pentanone		-32%		
	2-Hexanone		-35%		

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
Vinyl chloride, 2-Butanone, 4-Methyl-2-pentanone, 2-Hexanone.

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-Hexanone

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 13:31	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 13:31	Kerri E Legerlotz	1

Sample Description: BOP-85i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684184
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 10:45 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP85

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**150**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.9**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.8**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**2.3**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.6**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.9**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-26%
Vinyl chloride	-21%

Sample Description: BOP-85i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684184
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 10:45 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP85

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	Acetone		-28%		
	2-Butanone		-32%		
	4-Methyl-2-pentanone		-32%		
	2-Hexanone		-35%		

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
Vinyl chloride, 2-Butanone, 4-Methyl-2-pentanone.

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-Hexanone

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 13:51	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 13:51	Kerri E Legerlotz	1

Sample Description: BOP-86i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684185
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 10:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP86

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**100**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**85**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**1.0**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1.6**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.3**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.6**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**4.7**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21

Sample Description: BOP-86i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684185
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 10:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP86

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	acetone	-28			
	2-butanone	-32			
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: vinyl chloride, acetone, and 2-butanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 14:12	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 14:12	Kerri E Legerlotz	1

Sample Description: BOP-87i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684186
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 11:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP87

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**27**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**33**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.7**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**2.4**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	**4-Methyl-2-pentanone**	108-10-1	**5.5**		5.0	1
11996	**Methylene Chloride**	75-09-2	**1.8**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.4**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.8**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21

Sample Description: BOP-87i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684186
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016 11:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP87

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	acetone	-28			
	2-butanone	-32			
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: vinyl chloride, acetone, 2-butanone and 4-methyl-2-pentanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 14:32	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 14:32	Kerri E Legerlotz	1

Sample Description: BOP-x-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684187
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 09:00 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP-X

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: BOP-x-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684187
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 09:00 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP-X

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-butanone	-32			
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
vinyl chloride.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 16:54	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 16:54	Kerri E Legerlotz	1

Sample Description: E-2-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684188
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.6**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: E-2-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684188
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-butanone -32					
	4-methyl-2-pentanone -32					
	2-hexanone -35					

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: vinyl chloride.

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	**18,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**24,000**		500	100
Wet Chemistry	**EPA 300.0**	**mg/l**			**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**4.1**		1.0	1
	SM 5310 C-2000	**mg/l**			**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.0**		1.0	1
	EPA 376.1	**mg/l**			**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

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

Sample Description: E-2-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684188
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE2

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 17:15	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 17:15	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/11/2016 10:44	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163150006A	11/11/2016 11:01	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/09/2016 00:33	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/09/2016 00:33	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605A	11/09/2016 17:40	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16316133301A	11/11/2016 10:06	Satchel MacClintic	1

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Analysis Report

Sample Description: E-2-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684189
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**9.71**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:26	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: E-2-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684190
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:10 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**7.34**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:30	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: E-3-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684191
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.4**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**9.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: E-3-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684191
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-butanone	-32				
	4-methyl-2-pentanone	-32				
	2-hexanone	-35				

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
vinyl chloride.

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	**5.1**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**22,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**31,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	Sulfate	14808-79-8	1.0	U	1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.5**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

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

Sample Description: E-3-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684191
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE3

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 17:35	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 17:35	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/11/2016 11:03	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163150006A	11/11/2016 11:19	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/09/2016 01:28	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/09/2016 01:28	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605A	11/09/2016 17:54	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16316133301A	11/11/2016 10:06	Satchel MacClintic	1

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Analysis Report

Sample Description: E-3-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684192
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**13.9**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:33	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: E-3-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684193
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 14:50 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**9.58**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:36	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: E-4-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684194
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 13:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**5.0**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.8**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**1.1**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**0.8**		0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**29**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10

Sample Description: E-4-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684194
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 13:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**3.7**		2.0	10
11996	cis-1,2-Dichloroethene	156-59-2	2.0	U	2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**22**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32
4-methyl-2-pentanone	-32
2-hexanone	-35

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Description: E-4-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684194
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 13:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPE4

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.					
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	**45**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.90**		0.10	1
00228	**Sulfate**	14808-79-8	**6.6**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.3**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 17:55	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H163221AA	11/17/2016 18:16	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 17:55	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H163221AA	11/17/2016 18:16	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 12:59	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/09/2016 01:55	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/09/2016 01:55	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605A	11/09/2016 18:09	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16316133301A	11/11/2016 10:06	Satchel MacClintic	1

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Analysis Report

Sample Description: E-4-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684195
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 13:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**1.29**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:40	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: E-4-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684196
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 13:20 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.400 U	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163160635004	11/15/2016 11:43	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163160635004	11/14/2016 06:50	Lisa J Cooke	1

Sample Description: E-12-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684197
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 15:15 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP12

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.0**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**2.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**17**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: E-12-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684197
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 15:15 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP12

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-butanone -32					
	4-methyl-2-pentanone -32					
	2-hexanone -35					

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

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	**1,100**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50	U	50	10
07105	Ethane	74-84-0	50	U	50	10
07105	Ethene	74-85-1	50	U	50	10
07105	**Methane**	74-82-8	**1,400**		50	10
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**1.8**		0.10	1
00228	**Sulfate**	14808-79-8	**9.9**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.1**		1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 18:36	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 18:36	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 13:17	Johanna C Kennedy	1

Sample Description: E-12-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684197
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 15:15 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP12

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	2-DL	163150006A	11/11/2016 11:37	Johanna C Kennedy	10
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/09/2016 02:23	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/09/2016 02:23	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605A	11/09/2016 18:23	Drew M Gerhart	1

Sample Description: E-13-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684198
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 15:40 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP13

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**2.2**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**10**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28

Sample Description: E-13-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684198
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 15:40 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP13

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-butanone -32					
	4-methyl-2-pentanone -32					
	2-hexanone -35					

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

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	**65**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.3**		0.10	1
00228	**Sulfate**	14808-79-8	**8.9**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.2**		1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 18:57	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 18:57	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 13:34	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/09/2016 02:50	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/09/2016 02:50	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605B	11/09/2016 19:20	Drew M Gerhart	1

Sample Description: E-15-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684199
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 12:40 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP15

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.9**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

Sample Description: E-15-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684199
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 12:40 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP15

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
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	**9,300**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	250	U	250	50
07105	Ethane	74-84-0	250	U	250	50
07105	Ethene	74-85-1	250	U	250	50
07105	**Methane**	74-82-8	**13,000**		250	50
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**1.1**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**3.3**		1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 11:52	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 11:52	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 13:52	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163150006A	11/11/2016 11:56	Johanna C Kennedy	50
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/09/2016 03:18	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/09/2016 03:18	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605B	11/09/2016 19:34	Drew M Gerhart	1

Sample Description: E-16-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684200
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 12:25 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**2.3**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.8**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

Sample Description: E-16-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684200
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 12:25 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOP16

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
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	**11**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**2.9**		0.10	1
00228	**Sulfate**	14808-79-8	**7.0**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.3**		1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 12:13	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 12:13	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 14:09	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16313987901A	11/09/2016 04:13	Clinton M Wilson	1
00228	Sulfate	EPA 300.0	1	16313987901A	11/09/2016 04:13	Clinton M Wilson	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16314667605B	11/09/2016 19:48	Drew M Gerhart	1

Sample Description: DP1-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684201
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 12:05 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPD1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.3**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**98**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.9**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**17**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**30**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10

Sample Description: DP1-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684201
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 12:05 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPD1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**87**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**14**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**26**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Description: DP1-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684201
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/07/2016 12:05 by EMW The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

BOPD1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 15:15	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H163231AA	11/18/2016 15:36	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 15:15	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H163231AA	11/18/2016 15:36	Kerri E Legerlotz	10

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684202
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016

The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

TBBOP

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
chloromethane	-26
vinyl chloride	-21
acetone	-28
2-butanone	-32

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8684202
LL Group # 1730239
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/04/2016

The Boeing Company

Submitted: 11/08/2016 10:00
Reported: 11/21/2016 19:27

TBBOP

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	4-methyl-2-pentanone	-32			
	2-hexanone	-35			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163221AA	11/17/2016 12:10	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163221AA	11/17/2016 12:10	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Group Number: 1730239
Reported: 11/21/2016 19:27

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: H163221AA	Sample number(s): 8684180-8684188,8684191,8684194,8684197-8684198,8684202		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H163231AA	Sample number(s): 8684199-8684201		

*- 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 19:27

Group Number: 1730239

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 163150006A	Sample number(s): 8684188,8684191,8684194,8684197-8684200		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 163160635004	Sample number(s): 8684189-8684190,8684192-8684193,8684195-8684196		
Iron	0.400	U	0.400

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Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 19:27

Group Number: 1730239

Method Blank (continued)

Analysis Name	Result		LOQ
	mg/l		mg/l
Batch number: 16313987901A	Sample number(s): 8684188,8684191,8684194,8684197-8684200		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16314667605A	Sample number(s): 8684188,8684191,8684194,8684197		
Total Organic Carbon	1.0	U	1.0
Batch number: 16314667605B	Sample number(s): 8684198-8684200		
Total Organic Carbon	1.0	U	1.0
Batch number: 16316133301A	Sample number(s): 8684188,8684191,8684194		
Sulfide	2.0	U	2.0

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: H163221AA	Sample number(s): 8684180-8684188,8684191,8684194,8684197-8684198,8684202								
Acetone	37.5	32.54	37.5	29.95	87	80	65-130	8	30
Benzene	5.00	5.41	5.00	5.22	108	104	80-120	3	30
Bromodichloromethane	5.00	5.18	5.00	5.09	104	102	80-120	2	30
Bromoform	5.00	4.82	5.00	4.87	96	97	62-128	1	30
Bromomethane	5.00	4.21	5.00	4.01	84	80	62-131	5	30
2-Butanone	37.5	34.08	37.5	28.64	91	76	66-135	17	30
Carbon Disulfide	5.00	5.37	5.00	5.13	107	103	65-120	5	30
Carbon Tetrachloride	5.00	5.25	5.00	4.99	105	100	79-124	5	30
Chlorobenzene	5.00	5.50	5.00	5.29	110	106	80-120	4	30
Chloroethane	5.00	4.15	5.00	4.01	83	80	63-125	3	30
Chloroform	5.00	5.01	5.00	4.92	100	98	80-120	2	30
Chloromethane	5.00	3.54	5.00	3.41	71	68	55-126	4	30
Dibromochloromethane	5.00	5.19	5.00	5.21	104	104	78-127	0	30
1,1-Dichloroethane	5.00	5.31	5.00	5.09	106	102	75-120	4	30
1,2-Dichloroethane	5.00	4.75	5.00	4.75	95	95	72-127	0	30
1,1-Dichloroethene	5.00	5.43	5.00	5.42	109	108	76-120	0	30
cis-1,2-Dichloroethene	5.00	5.34	5.00	5.14	107	103	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.51	5.00	5.27	110	105	80-120	4	30
1,2-Dichloropropane	5.00	5.37	5.00	5.22	107	104	80-120	3	30
cis-1,3-Dichloropropene	5.00	5.23	5.00	5.14	105	103	80-124	2	30
trans-1,3-Dichloropropene	5.00	5.56	5.00	5.44	111	109	77-121	2	30
Ethylbenzene	5.00	5.50	5.00	5.25	110	105	80-120	5	30
2-Hexanone	25	21.55	25	17.14	86	69*	73-128	23	30
4-Methyl-2-pentanone	25	22.72	25	17.67	91	71	71-129	25	30
Methylene Chloride	5.00	5.30	5.00	5.30	106	106	80-120	0	30
Styrene	5.00	5.67	5.00	5.56	113	111	80-120	2	30
1,1,2,2-Tetrachloroethane	5.00	5.40	5.00	5.46	108	109	75-123	1	30

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Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 19:27

Group Number: 1730239

LCS/LCSD (continued)

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
Tetrachloroethene	5.00	5.44	5.00	5.06	109	101	80-120	7	30
Toluene	5.00	5.58	5.00	5.33	112	107	80-120	5	30
112Trichloro122Trifluoroethane	5.00	5.44	5.00	5.20	109	104	75-120	5	30
1,1,1-Trichloroethane	5.00	5.07	5.00	4.78	101	96	79-120	6	30
1,1,2-Trichloroethane	5.00	5.38	5.00	5.23	108	105	80-120	3	30
Trichloroethene	5.00	5.41	5.00	5.19	108	104	80-120	4	30
Trichlorofluoromethane	5.00	4.40	5.00	4.12	88	82	71-131	7	30
Vinyl Acetate	12.5	12.3	12.5	12.44	98	100	63-122	1	30
Vinyl Chloride	5.00	3.96	5.00	3.81	79	76	62-128	4	30
m+p-Xylene	10	11.21	10	10.65	112	107	80-120	5	30
o-Xylene	5.00	5.43	5.00	5.18	109	104	80-120	5	30
Batch number: H163231AA	Sample number(s): 8684199-8684201								
Acetone	37.5	32.17			86		65-130		
Benzene	5.00	5.45			109		80-120		
Bromodichloromethane	5.00	5.40			108		80-120		
Bromoform	5.00	4.85			97		62-128		
Bromomethane	5.00	4.07			81		62-131		
2-Butanone	37.5	30.57			82		66-135		
Carbon Disulfide	5.00	5.40			108		65-120		
Carbon Tetrachloride	5.00	5.13			103		79-124		
Chlorobenzene	5.00	5.29			106		80-120		
Chloroethane	5.00	4.04			81		63-125		
Chloroform	5.00	5.09			102		80-120		
Chloromethane	5.00	3.42			68		55-126		
Dibromochloromethane	5.00	5.13			103		78-127		
1,1-Dichloroethane	5.00	5.33			107		75-120		
1,2-Dichloroethane	5.00	4.85			97		72-127		
1,1-Dichloroethene	5.00	5.43			109		76-120		
cis-1,2-Dichloroethene	5.00	5.38			108		80-120		
trans-1,2-Dichloroethene	5.00	5.44			109		80-120		
1,2-Dichloropropane	5.00	5.49			110		80-120		
cis-1,3-Dichloropropene	5.00	5.31			106		80-124		
trans-1,3-Dichloropropene	5.00	5.30			106		77-121		
Ethylbenzene	5.00	5.30			106		80-120		
2-Hexanone	25	19			76		73-128		
4-Methyl-2-pentanone	25	24.06			96		71-129		
Methylene Chloride	5.00	5.33			107		80-120		
Styrene	5.00	5.55			111		80-120		
1,1,2,2-Tetrachloroethane	5.00	5.57			111		75-123		
Tetrachloroethene	5.00	4.99			100		80-120		
Toluene	5.00	5.41			108		80-120		
112Trichloro122Trifluoroethane	5.00	5.29			106		75-120		
1,1,1-Trichloroethane	5.00	4.94			99		79-120		
1,1,2-Trichloroethane	5.00	5.23			105		80-120		
Trichloroethene	5.00	5.39			108		80-120		

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Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 19:27

Group Number: 1730239

LCS/LCSD (continued)

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					
Trichlorofluoromethane	5.00	4.12			82		71-131		
Vinyl Acetate	12.5	12.42			99		63-122		
Vinyl Chloride	5.00	3.86			77		62-128		
m+p-Xylene	10	10.73			107		80-120		
o-Xylene	5.00	5.27			105		80-120		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 163150006A	Sample number(s): 8684188,8684191,8684194,8684197-8684200								
Acetylene	51.2	48.36	51.2	46.29	94	90	61-148	4	20
Ethane	59.2	58.07	59.2	58.01	98	98	85-115	0	20
Ethene	60.8	58.88	60.8	58.52	97	96	83-115	1	20
Methane	59.8	61.57	59.8	60.43	103	101	85-115	2	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 163160635004	Sample number(s): 8684189-8684190,8684192-8684193,8684195-8684196								
Iron	1.00	1.01			101		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16313987901A	Sample number(s): 8684188,8684191,8684194,8684197-8684200								
Nitrate Nitrogen	0.750	0.750			100		90-110		
Sulfate	7.50	7.35			98		90-110		
Batch number: 16314667605A	Sample number(s): 8684188,8684191,8684194,8684197								
Total Organic Carbon	25	24.65			99		91-113		
Batch number: 16314667605B	Sample number(s): 8684198-8684200								
Total Organic Carbon	25	24.65			99		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16316133301A	Sample number(s): 8684188,8684191,8684194								
Sulfide	20	20.73	20	20.52	104	103	80-120	1	4

MS/MSD

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

Analysis Name	Unspiked Conc		MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l		ug/l	ug/l	ug/l	ug/l					
Batch number: H163231AA	Sample number(s): 8684199-8684201 UNSPK: P690207										
Acetone	5.0	U	37.5	31.97	37.5	31.34	85	84	65-130	2	30
Benzene	0.2	U	5.00	5.35	5.00	5.30	107	106	80-120	1	30
Bromodichloromethane	0.5	U	5.00	5.11	5.00	5.27	102	105	80-120	3	30
Bromoform	0.5	U	5.00	4.40	5.00	4.93	88	99	62-128	11	30

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Quality Control Summary

Client Name: The Boeing Company
Reported: 11/21/2016 19:27

Group Number: 1730239

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
Bromomethane	0.5	U	5.00	4.05	5.00	3.98	81	80	62-131	2	30
2-Butanone	5.0	U	37.5	32.24	37.5	30.73	86	82	66-135	5	30
Carbon Disulfide	0.5	U	5.00	5.38	5.00	5.46	108	109	65-120	1	30
Carbon Tetrachloride	0.2	U	5.00	5.04	5.00	5.23	101	105	79-124	4	30
Chlorobenzene	0.5	U	5.00	5.11	5.00	5.35	102	107	80-120	5	30
Chloroethane	0.5	U	5.00	3.98	5.00	4.04	80	81	63-125	1	30
Chloroform	0.2	U	5.00	4.93	5.00	5.02	99	100	80-120	2	30
Chloromethane	0.5	U	5.00	3.35	5.00	3.36	67	67	55-126	0	30
Dibromochloromethane	0.5	U	5.00	4.87	5.00	5.21	97	104	78-127	7	30
1,1-Dichloroethane	0.5	U	5.00	5.09	5.00	5.16	102	103	75-120	1	30
1,2-Dichloroethane	0.2	U	5.00	4.76	5.00	4.86	95	97	72-127	2	30
1,1-Dichloroethene	0.2	U	5.00	5.40	5.00	5.52	108	110	76-120	2	30
cis-1,2-Dichloroethene	0.111		5.00	5.14	5.00	5.35	100	105	80-120	4	30
trans-1,2-Dichloroethene	0.2	U	5.00	5.27	5.00	5.45	105	109	80-120	3	30
1,2-Dichloropropane	0.5	U	5.00	5.23	5.00	5.33	105	107	80-120	2	30
cis-1,3-Dichloropropene	0.2	U	5.00	4.82	5.00	5.17	96	103	80-124	7	30
trans-1,3-Dichloropropene	0.2	U	5.00	4.81	5.00	5.24	96	105	77-121	9	30
Ethylbenzene	0.5	U	5.00	5.29	5.00	5.43	106	109	80-120	3	30
2-Hexanone	5.0	U	25	21.1	25	19.34	84	77	73-128	9	30
4-Methyl-2-pentanone	5.0	U	25	20.75	25	19.32	83	77	71-129	7	30
Methylene Chloride	0.5	U	5.00	5.04	5.00	5.04	101	101	80-120	0	30
Styrene	0.5	U	5.00	5.27	5.00	5.56	105	111	80-120	5	30
1,1,2,2-Tetrachloroethane	0.2	U	5.00	5.21	5.00	5.68	104	114	75-123	9	30
Tetrachloroethene	0.161		5.00	5.17	5.00	5.34	100	104	80-120	3	30
Toluene	0.2	U	5.00	5.26	5.00	5.44	105	109	80-120	3	30
112Trichloro122Trifluoroethane	0.5	U	5.00	5.29	5.00	5.41	106	108	75-120	2	30
1,1,1-Trichloroethane	0.5	U	5.00	4.88	5.00	4.97	98	99	79-120	2	30
1,1,2-Trichloroethane	0.2	U	5.00	5.12	5.00	5.45	102	109	80-120	6	30
Trichloroethene	0.2	U	5.00	5.19	5.00	5.36	104	107	80-120	3	30
Trichlorofluoromethane	0.5	U	5.00	4.23	5.00	4.25	85	85	71-131	0	30
Vinyl Acetate	0.5	U	12.5	12.95	12.5	12.91	104	103	63-122	0	30
Vinyl Chloride	0.157		5.00	3.97	5.00	4.02	76	77	62-128	1	30
m+p-Xylene	0.5	U	10	10.71	10	10.89	107	109	80-120	2	30
o-Xylene	0.5	U	5.00	5.18	5.00	5.30	104	106	80-120	2	30
	mg/l		mg/l	mg/l	mg/l	mg/l	mg/l				
Batch number: 163160635004	Sample number(s): 8684189-8684190,8684192-8684193,8684195-8684196 UNSPK: P690208										
Iron	10.42		1.00	11.68	1.00	11.89	126 (2)	147 (2)	75-125	2	20
	mg/l		mg/l	mg/l	mg/l	mg/l	mg/l				
Batch number: 16313987901A	Sample number(s): 8684188,8684191,8684194,8684197-8684200 UNSPK: P684153										
Nitrate Nitrogen	2.10		1.00	3.24			114*		90-110		
Sulfate	8.81		10	19.82			110		90-110		
Batch number: 16314667605A	Sample number(s): 8684188,8684191,8684194,8684197 UNSPK: P683904										

*- 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 19:27

Group Number: 1730239

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
Total Organic Carbon	80.95	10	87.61			67 (2)		91-113		
Batch number: 16314667605B	Sample number(s): 8684198-8684200 UNSPK: P683906									
Total Organic Carbon	175.84	100	276.73			101		91-113		

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 163160635004	Sample number(s): 8684189-8684190,8684192-8684193,8684195-8684196 BKG: P690208			
Iron	10.42	10.91	5	20
	mg/l	mg/l		
Batch number: 16313987901A	Sample number(s): 8684188,8684191,8684194,8684197-8684200 BKG: P684153			
Nitrate Nitrogen	2.10	2.12	1	15
Sulfate	8.81	8.73	1	15
Batch number: 16314667605A	Sample number(s): 8684188,8684191,8684194,8684197 BKG: P683904			
Total Organic Carbon	80.95	79.76	1	3
Batch number: 16314667605B	Sample number(s): 8684198-8684200 BKG: P683906			
Total Organic Carbon	175.84	161.14	9*	3
	mg/l	mg/l		
Batch number: 16316133301A	Sample number(s): 8684188,8684191,8684194 BKG: P686464			
Sulfide	2.0 U	2.0 U	0 (1)	20

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 Boeing 38
Batch number: H163221AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8684180	98	98	99	96
8684181	101	96	98	101
8684182	96	97	103	100
8684182DL	94	98	104	100

*- 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
Group Number: 1730239
Reported: 11/21/2016 19:27

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
8684183	95	97	102	101
8684184	95	98	103	101
8684185	95	96	102	102
8684186	97	96	101	99
8684187	98	96	102	94
8684188	98	98	102	99
8684191	97	98	101	96
8684194	98	102	101	99
8684194DL	98	99	103	95
8684197	96	100	103	99
8684198	97	98	102	97
8684202	96	99	102	96
Blank	97	104	103	100
LCS	95	97	103	99
LCSD	96	96	104	101
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H163231AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8684199	96	101	102	99
8684200	96	99	102	96
8684201	97	98	101	97
8684201DL	96	98	102	96
Blank	96	98	104	96
LCS	100	98	99	97
MS	99	103	100	100
MSD	95	98	101	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 163150006A

	Propene
8684188	85
8684188DL	95
8684191	79
8684191DL	92
8684194	91
8684197	91
8684197DL	88
8684198	90
8684199	90
8684199DL	92
8684200	89
Blank	103

*- 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
Group Number: 1730239
Reported: 11/21/2016 19:27

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
LCS	102
LCSD	103
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

eurofins | Lancaster Laboratories Environmental

Acct. # 13419 For Eurofins Lancaster Laboratories Environmental use only Group # 1730239 Sample # 465411180-202

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham OR
Site Project: Boeing of Portland
Site Program/#: 02511B.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 2

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) VOC (38 list)	ToC	Sulfate	Nitrate	AMEE	Sulfide	Total Iron	Dissolved Iron					(5) Remarks/Comments
BOP-75i-1116	11/4/16	1520	H2O	3	X												
BOP-78i-1116		1245	H2O	3	X												
BOP-79i-1116		1225	H2O	3	X												
BOP-84i-1116		1315	H2O	3	X												
BOP-85i-1116		1045	H2O	3	X												
BOP-86i-1116		1020	H2O	3	X												
BOP-87i-1116	↓	1110	H2O	3	X												
BOP-X-1116	11/7/16	0900	H2O	3	X					~~X~~	~~X~~	~~X~~ EMW					
E-2-1116		1410	H2O	12	X	X	X	X	X	X	X	X					
E-3-1116		1450	H2O	12	X	X	X	X	X	X	X	X					
E-4-1116		1320	H2O	12	X	X	X	X	X	X	X	X					
E-12-1116		1515	H2O	9	X	X	X	X	X								
E-13-1116		1540	H2O	9	X	X	X	X	X								
E-15-1116		1240	H2O	9	X	X	X	X	X								
E-16-1116	↓	1225	H2O	9	X	X	X	X	X								

Page 3 of 7

(6) Turnaround Time Requested (please circle)

Standard	5 day	4 day
72 hour	48 hour	24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
EMWankel	11/7/16 1700		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
			11/8/16 1000

Relinquished by commercial carrier (circle): UPS (FedEx) Other: _____

Temperature upon Receipt: 1.1 / 2.2 °C

Custody Seals Intact?: (Yes) No

Boeing Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 13419

For Eurofins Lancaster Laboratories Environmental use only
Group # 1730239 Sample # 8684180-202
Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham OR
Site Project: Boeing of Portland
Site Program/#: 02S1P6.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify):
Sampler: EMW # of Coolers: 2

(4) Analyses Requested

VOC (38 List)

(5) Remarks/Comments

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOC (38 List)
DP1-1116	11/7/16	1205	H2O	3	X
Trip Blanks	—	—	H2O	2	X

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

	Date/Time	Received by:	Date/Time
Relinquished by: E Wankel	11/7/16 1700		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time: 11/8/16 1000

Relinquished by commercial carrier (circle): UPS FedEx Other:

Temperature upon Receipt: 1.1 °C / 2.2

Custody Seals Intact?: Yes No

(7)

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Sample Administration Receipt Documentation Log

Doc Log ID: 167521

Group Number(s): 1730239

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	11/08/2016 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:	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 Krista Abel (3058) at 10:52 on 11/08/2016

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	DT146	1.1	DT	Wet	Y	Bagged	N
2	DT146	2.2	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T : 717-656-2300
F : 717-656-2681
www.LancasterLabs.com

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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 ≥ 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.

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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: November 29, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 11/09/2016
Group Number: 1730794
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-07i-1116 Water	8686463
BOP-16i-1116 Water	8686464
BOP-16i-1116 Total Metals Water	8686465
BOP-16i-1116 Dissolved Metals Water	8686466
BOP-88i-1116 Water	8686467
BOP-88i-1116 Total Metals Water	8686468
BOP-88i-1116 Dissolved Metals Water	8686469
BOP-y-1116 Water	8686470
Trip Blank Water	8686471

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1730794

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.

Preservation requirements were not met. Preservation requirements were not met.

Analysis Specific Comments:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8686463, 8686464, 8686470, 8686471

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8686467

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
A preserved vial was submitted for analysis. However, the pH at the time of analysis was 4.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
Acetone and 2-Butanone.

SW-846 6010C, Metals

Batch #: 163210635006 (Sample number(s): 8686465-8686466, 8686468-8686469 UNSPK: 8686465 BKG: 8686465)

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

SW-846 6010C, Metals Dissolved

Batch #: 163210635006 (Sample number(s): 8686465-8686466, 8686468-8686469 UNSPK: 8686465 BKG: 8686465)

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

EPA 300.0, Wet Chemistry

Sample #s: 8686467

Reporting limits were raised due to interference from the sample matrix.

Batch #: 16314987171A (Sample number(s): 8686463-8686464, 8686467 UNSPK: P686486 BKG: P686486)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Nitrate Nitrogen

SM 5310 C-2000, Wet Chemistry

Batch #: 16315667603A (Sample number(s): 8686463-8686464, 8686467 UNSPK: P686033 BKG: P686033)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

Sample Description: BOP-07i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686463
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 14:20 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BOP7I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	10	U	10	2
11996	Benzene	71-43-2	0.4	U	0.4	2
11996	Bromodichloromethane	75-27-4	1.0	U	1.0	2
11996	Bromoform	75-25-2	1.0	U	1.0	2
11996	Bromomethane	74-83-9	1.0	U	1.0	2
11996	2-Butanone	78-93-3	10	U	10	2
11996	Carbon Disulfide	75-15-0	1.0	U	1.0	2
11996	Carbon Tetrachloride	56-23-5	0.4	U	0.4	2
11996	Chlorobenzene	108-90-7	1.0	U	1.0	2
11996	Chloroethane	75-00-3	1.0	U	1.0	2
11996	Chloroform	67-66-3	0.4	U	0.4	2
11996	Chloromethane	74-87-3	1.0	U	1.0	2
11996	Dibromochloromethane	124-48-1	1.0	U	1.0	2
11996	1,1-Dichloroethane	75-34-3	1.0	U	1.0	2
11996	1,2-Dichloroethane	107-06-2	0.4	U	0.4	2
11996	**1,1-Dichloroethene**	75-35-4	**16**		0.4	2
11996	**cis-1,2-Dichloroethene**	156-59-2	**18**		0.4	2
11996	trans-1,2-Dichloroethene	156-60-5	0.4	U	0.4	2
11996	1,2-Dichloropropane	78-87-5	1.0	U	1.0	2
11996	cis-1,3-Dichloropropene	10061-01-5	0.4	U	0.4	2
11996	trans-1,3-Dichloropropene	10061-02-6	0.4	U	0.4	2
11996	Ethylbenzene	100-41-4	1.0	U	1.0	2
11996	2-Hexanone	591-78-6	10	U	10	2
11996	4-Methyl-2-pentanone	108-10-1	10	U	10	2
11996	Methylene Chloride	75-09-2	1.0	U	1.0	2
11996	Styrene	100-42-5	1.0	U	1.0	2
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.4	U	0.4	2
11996	**Tetrachloroethene**	127-18-4	**4.5**		0.4	2
11996	Toluene	108-88-3	0.4	U	0.4	2
11996	**112Trichloro122Trifluoroethane**	76-13-1	**2.2**		1.0	2
11996	**1,1,1-Trichloroethane**	71-55-6	**2.2**		1.0	2
11996	1,1,2-Trichloroethane	79-00-5	0.4	U	0.4	2
11996	**Trichloroethene**	79-01-6	**230**	**E**	0.4	2
11996	Trichlorofluoromethane	75-69-4	1.0	U	1.0	2
11996	Vinyl Acetate	108-05-4	1.0	U	1.0	2
11996	Vinyl Chloride	75-01-4	0.4	U	0.4	2
11996	m+p-Xylene	179601-23-1	1.0	U	1.0	2
11996	o-Xylene	95-47-6	1.0	U	1.0	2
Trial ID: DL						
11996	Acetone	67-64-1	50	U	50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10

Sample Description: BOP-07i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686463
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 14:20 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BOP7I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	**1,1-Dichloroethene**	75-35-4	**16**		2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**18**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	**Tetrachloroethene**	127-18-4	**4.5**		2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**230**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Description: BOP-07i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686463
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 14:20 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BOP7I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
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	**1,500**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	50	U	50	10
07105	Ethane	74-84-0	50	U	50	10
07105	Ethene	74-85-1	50	U	50	10
07105	**Methane**	74-82-8	**1,800**		50	10
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**1.4**		0.10	1
00228	**Sulfate**	14808-79-8	**8.9**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 17:38	Kerri E Legerlotz	2
11996	8260C Boeing 38	SW-846 8260C	2-DL	H163231AA	11/18/2016 14:14	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 17:38	Kerri E Legerlotz	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H163231AA	11/18/2016 14:14	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 14:44	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163150006A	11/11/2016 12:14	Johanna C Kennedy	10
00368	Nitrate Nitrogen	EPA 300.0	1	16314987171A	11/10/2016 02:03	Hallie Burnett	1
00228	Sulfate	EPA 300.0	1	16314987171A	11/10/2016 02:03	Hallie Burnett	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16315667603A	11/10/2016 14:18	Drew M Gerhart	1

Sample Description: BOP-16i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686464
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 13:15 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BP16I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.9**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**3.0**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.8**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.8**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

Sample Description: BOP-16i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686464
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 13:15 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BP16I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
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	**190**		5.0	1
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.57**		0.10	1
00228	**Sulfate**	14808-79-8	**8.2**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	Total Organic Carbon	n.a.	1.0	U	1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 12:33	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 12:33	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 15:02	Johanna C Kennedy	1
00368	Nitrate Nitrogen	EPA 300.0	1	16314987171A	11/10/2016 02:18	Hallie Burnett	1
00228	Sulfate	EPA 300.0	1	16314987171A	11/10/2016 02:18	Hallie Burnett	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16315667603A	11/10/2016 14:57	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16316133301A	11/11/2016 10:06	Satchel MacClintic	1

Sample Description: BOP-16i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686465
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 13:15 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.444**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635006	11/23/2016 05:26	Joanne M Gates	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

Sample Description: BOP-16i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686466
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 13:15 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**0.473**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635006	11/23/2016 05:42	Joanne M Gates	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

Sample Description: BOP-88i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686467
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 11:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BP88I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**990**	**E**	10	2
11996	Benzene	71-43-2	0.4	U	0.4	2
11996	Bromodichloromethane	75-27-4	1.0	U	1.0	2
11996	Bromoform	75-25-2	1.0	U	1.0	2
11996	Bromomethane	74-83-9	1.0	U	1.0	2
11996	**2-Butanone**	78-93-3	**1,200**	**E**	10	2
11996	Carbon Disulfide	75-15-0	1.0	U	1.0	2
11996	Carbon Tetrachloride	56-23-5	0.4	U	0.4	2
11996	Chlorobenzene	108-90-7	1.0	U	1.0	2
11996	Chloroethane	75-00-3	1.0	U	1.0	2
11996	**Chloroform**	67-66-3	**1.8**		0.4	2
11996	Chloromethane	74-87-3	1.0	U	1.0	2
11996	Dibromochloromethane	124-48-1	1.0	U	1.0	2
11996	1,1-Dichloroethane	75-34-3	1.0	U	1.0	2
11996	1,2-Dichloroethane	107-06-2	0.4	U	0.4	2
11996	1,1-Dichloroethene	75-35-4	0.4	U	0.4	2
11996	**cis-1,2-Dichloroethene**	156-59-2	**110**	**E**	0.4	2
11996	trans-1,2-Dichloroethene	156-60-5	0.4	U	0.4	2
11996	1,2-Dichloropropane	78-87-5	1.0	U	1.0	2
11996	cis-1,3-Dichloropropene	10061-01-5	0.4	U	0.4	2
11996	trans-1,3-Dichloropropene	10061-02-6	0.4	U	0.4	2
11996	Ethylbenzene	100-41-4	1.0	U	1.0	2
11996	2-Hexanone	591-78-6	10	U	10	2
11996	4-Methyl-2-pentanone	108-10-1	10	U	10	2
11996	Methylene Chloride	75-09-2	1.0	U	1.0	2
11996	Styrene	100-42-5	1.0	U	1.0	2
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.4	U	0.4	2
11996	Tetrachloroethene	127-18-4	0.4	U	0.4	2
11996	Toluene	108-88-3	0.4	U	0.4	2
11996	112Trichloro122Trifluoroethane	76-13-1	1.0	U	1.0	2
11996	1,1,1-Trichloroethane	71-55-6	1.0	U	1.0	2
11996	1,1,2-Trichloroethane	79-00-5	0.4	U	0.4	2
11996	**Trichloroethene**	79-01-6	**6.2**		0.4	2
11996	Trichlorofluoromethane	75-69-4	1.0	U	1.0	2
11996	Vinyl Acetate	108-05-4	1.0	U	1.0	2
11996	**Vinyl Chloride**	75-01-4	**7.4**		0.4	2
11996	m+p-Xylene	179601-23-1	1.0	U	1.0	2
11996	o-Xylene	95-47-6	1.0	U	1.0	2
Trial ID: DL						
11996	**Acetone**	67-64-1	**1,200**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	**2-Butanone**	78-93-3	**1,600**		50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10

Sample Description: BOP-88i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686467
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 11:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BP88I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**110**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	**Trichloroethene**	79-01-6	**6.2**		2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	**Vinyl Chloride**	75-01-4	**7.3**		2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

A preserved vial was submitted for analysis. However, the pH at

Sample Description: BOP-88i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686467
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 11:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BP88I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	the time of analysis was 4.					
	The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: Acetone and 2-Butanone.					
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	**11**		5.0	1
07105	**Methane**	74-82-8	**7,900**	**E**	5.0	1
	Trial ID: DL					
07105	Acetylene	74-86-2	250	U	250	50
07105	Ethane	74-84-0	250	U	250	50
07105	Ethene	74-85-1	250	U	250	50
07105	**Methane**	74-82-8	**12,000**		250	50
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**1.1**		1.0	10
	Reporting limits were raised due to interference from the sample matrix.					
00228	**Sulfate**	14808-79-8	**2,620**		500	500
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**9,830**		250	250
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for Sulfide.
Preservation requirements were not met. The pH preservation of all non-volatile containers was checked upon receipt at the laboratory. The container for the following analysis was not within specification and was adjusted accordingly by the laboratory: Total Organic Carbon, Sulfide

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

Sample Description: BOP-88i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686467
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 11:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BP88I

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 18:19	Kerri E Legerlotz	2
11996	8260C Boeing 38	SW-846 8260C	2-DL	H163231AA	11/18/2016 14:55	Kerri E Legerlotz	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 18:19	Kerri E Legerlotz	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H163231AA	11/18/2016 14:55	Kerri E Legerlotz	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163150006A	11/10/2016 15:20	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163150006A	11/11/2016 12:32	Johanna C Kennedy	50
00368	Nitrate Nitrogen	EPA 300.0	1	16314987171A	11/10/2016 03:16	Hallie Burnett	10
00228	Sulfate	EPA 300.0	2	16314987171A	11/11/2016 02:46	Alexandria M Lanager	500
00273	Total Organic Carbon	SM 5310 C-2000	1	16315667603A	11/10/2016 14:31	Drew M Gerhart	250
01333	Sulfide	EPA 376.1	1	16316133301A	11/11/2016 10:06	Satchel MacClintic	1

Sample Description: BOP-88i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686468
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 11:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**2,580**	4.00	10

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635006	11/28/2016 20:17	Elaine F Stoltzfus	10
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

Sample Description: BOP-88i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686469
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 11:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**2,490**	4.00	10

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635006	11/28/2016 20:23	Elaine F Stoltzfus	10
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

Sample Description: BOP-y-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686470
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 09:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BOP-Y

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**0.3**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.6**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**18**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**19**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**4.7**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	**112Trichloro122Trifluoroethane**	76-13-1	**2.5**		0.5	1
11996	**1,1,1-Trichloroethane**	71-55-6	**2.5**		0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**250**	**E**	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	Acetone	67-64-1	100	U	100	20
11996	Benzene	71-43-2	4.0	U	4.0	20
11996	Bromodichloromethane	75-27-4	10	U	10	20
11996	Bromoform	75-25-2	10	U	10	20
11996	Bromomethane	74-83-9	10	U	10	20
11996	2-Butanone	78-93-3	100	U	100	20
11996	Carbon Disulfide	75-15-0	10	U	10	20

Sample Description: BOP-y-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686470
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 09:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BOP-Y

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Carbon Tetrachloride	56-23-5	4.0	U	4.0	20
11996	Chlorobenzene	108-90-7	10	U	10	20
11996	Chloroethane	75-00-3	10	U	10	20
11996	Chloroform	67-66-3	4.0	U	4.0	20
11996	Chloromethane	74-87-3	10	U	10	20
11996	Dibromochloromethane	124-48-1	10	U	10	20
11996	1,1-Dichloroethane	75-34-3	10	U	10	20
11996	1,2-Dichloroethane	107-06-2	4.0	U	4.0	20
11996	**1,1-Dichloroethene**	75-35-4	**11**		4.0	20
11996	**cis-1,2-Dichloroethene**	156-59-2	**13**		4.0	20
11996	trans-1,2-Dichloroethene	156-60-5	4.0	U	4.0	20
11996	1,2-Dichloropropane	78-87-5	10	U	10	20
11996	cis-1,3-Dichloropropene	10061-01-5	4.0	U	4.0	20
11996	trans-1,3-Dichloropropene	10061-02-6	4.0	U	4.0	20
11996	Ethylbenzene	100-41-4	10	U	10	20
11996	2-Hexanone	591-78-6	100	U	100	20
11996	4-Methyl-2-pentanone	108-10-1	100	U	100	20
11996	Methylene Chloride	75-09-2	10	U	10	20
11996	Styrene	100-42-5	10	U	10	20
11996	1,1,2,2-Tetrachloroethane	79-34-5	4.0	U	4.0	20
11996	Tetrachloroethene	127-18-4	4.0	U	4.0	20
11996	Toluene	108-88-3	4.0	U	4.0	20
11996	112Trichloro122Trifluoroethane	76-13-1	10	U	10	20
11996	1,1,1-Trichloroethane	71-55-6	10	U	10	20
11996	1,1,2-Trichloroethane	79-00-5	4.0	U	4.0	20
11996	**Trichloroethene**	79-01-6	**160**		4.0	20
11996	Trichlorofluoromethane	75-69-4	10	U	10	20
11996	Vinyl Acetate	108-05-4	10	U	10	20
11996	Vinyl Chloride	75-01-4	4.0	U	4.0	20
11996	m+p-Xylene	179601-23-1	10	U	10	20
11996	o-Xylene	95-47-6	10	U	10	20

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Description: BOP-y-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686470
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016 09:00 by EMW The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BOP-Y

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 12:53	Kerri E Legerlotz	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H163231AA	11/18/2016 13:13	Kerri E Legerlotz	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 12:53	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H163231AA	11/18/2016 13:13	Kerri E Legerlotz	20

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686471
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016

The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BPT09

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8686471
LL Group # 1730794
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/08/2016

The Boeing Company

Submitted: 11/09/2016 09:30
Reported: 11/29/2016 09:48

BPT09

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 11:32	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 11:32	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 09:48

Group Number: 1730794

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: H163231AA	Sample number(s): 8686463-8686464,8686467,8686470-8686471		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 163150006A	Sample number(s): 8686463-8686464,8686467		

*- 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.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 09:48

Group Number: 1730794

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 163210635006	Sample number(s): 8686465-8686466,8686468-8686469		
Iron	0.400	U	0.400
Batch number: 16314987171A	Sample number(s): 8686463-8686464,8686467		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16315667603A	Sample number(s): 8686463-8686464,8686467		
Total Organic Carbon	1.0	U	1.0
Batch number: 16316133301A	Sample number(s): 8686464,8686467		
Sulfide	2.0	U	2.0

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: H163231AA	Sample number(s): 8686463-8686464,8686467,8686470-8686471								
Acetone	37.5	32.17			86		65-130		
Benzene	5.00	5.45			109		80-120		
Bromodichloromethane	5.00	5.40			108		80-120		
Bromoform	5.00	4.85			97		62-128		
Bromomethane	5.00	4.07			81		62-131		
2-Butanone	37.5	30.57			82		66-135		
Carbon Disulfide	5.00	5.40			108		65-120		
Carbon Tetrachloride	5.00	5.13			103		79-124		
Chlorobenzene	5.00	5.29			106		80-120		
Chloroethane	5.00	4.04			81		63-125		
Chloroform	5.00	5.09			102		80-120		
Chloromethane	5.00	3.42			68		55-126		
Dibromochloromethane	5.00	5.13			103		78-127		
1,1-Dichloroethane	5.00	5.33			107		75-120		
1,2-Dichloroethane	5.00	4.85			97		72-127		
1,1-Dichloroethene	5.00	5.43			109		76-120		
cis-1,2-Dichloroethene	5.00	5.38			108		80-120		
trans-1,2-Dichloroethene	5.00	5.44			109		80-120		
1,2-Dichloropropane	5.00	5.49			110		80-120		
cis-1,3-Dichloropropene	5.00	5.31			106		80-124		
trans-1,3-Dichloropropene	5.00	5.30			106		77-121		
Ethylbenzene	5.00	5.30			106		80-120		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 11/29/2016 09:48

Group Number: 1730794

LCS/LCSD (continued)

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					
2-Hexanone	25	19			76		73-128		
4-Methyl-2-pentanone	25	24.06			96		71-129		
Methylene Chloride	5.00	5.33			107		80-120		
Styrene	5.00	5.55			111		80-120		
1,1,2,2-Tetrachloroethane	5.00	5.57			111		75-123		
Tetrachloroethene	5.00	4.99			100		80-120		
Toluene	5.00	5.41			108		80-120		
112Trichloro122Trifluoroethane	5.00	5.29			106		75-120		
1,1,1-Trichloroethane	5.00	4.94			99		79-120		
1,1,2-Trichloroethane	5.00	5.23			105		80-120		
Trichloroethene	5.00	5.39			108		80-120		
Trichlorofluoromethane	5.00	4.12			82		71-131		
Vinyl Acetate	12.5	12.42			99		63-122		
Vinyl Chloride	5.00	3.86			77		62-128		
m+p-Xylene	10	10.73			107		80-120		
o-Xylene	5.00	5.27			105		80-120		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 163150006A	Sample number(s): 8686463-8686464,8686467								
Acetylene	51.2	48.36	51.2	46.29	94	90	61-148	4	20
Ethane	59.2	58.07	59.2	58.01	98	98	85-115	0	20
Ethene	60.8	58.88	60.8	58.52	97	96	83-115	1	20
Methane	59.8	61.57	59.8	60.43	103	101	85-115	2	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 163210635006	Sample number(s): 8686465-8686466,8686468-8686469								
Iron	1.00	1.03			103		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16314987171A	Sample number(s): 8686463-8686464,8686467								
Nitrate Nitrogen	0.750	0.744			99		90-110		
Sulfate	7.50	7.32			98		90-110		
Batch number: 16315667603A	Sample number(s): 8686463-8686464,8686467								
Total Organic Carbon	25	25.05			100		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16316133301A	Sample number(s): 8686464,8686467								
Sulfide	20	20.73	20	20.52	104	103	80-120	1	4

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: 11/29/2016 09:48

Group Number: 1730794

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: H163231AA	Sample number(s): 8686463-8686464,8686467,8686470-8686471 UNSPK: P690207										
Acetone	5.0	U	37.5	31.97	37.5	31.34	85	84	65-130	2	30
Benzene	0.2	U	5.00	5.35	5.00	5.30	107	106	80-120	1	30
Bromodichloromethane	0.5	U	5.00	5.11	5.00	5.27	102	105	80-120	3	30
Bromoform	0.5	U	5.00	4.40	5.00	4.93	88	99	62-128	11	30
Bromomethane	0.5	U	5.00	4.05	5.00	3.98	81	80	62-131	2	30
2-Butanone	5.0	U	37.5	32.24	37.5	30.73	86	82	66-135	5	30
Carbon Disulfide	0.5	U	5.00	5.38	5.00	5.46	108	109	65-120	1	30
Carbon Tetrachloride	0.2	U	5.00	5.04	5.00	5.23	101	105	79-124	4	30
Chlorobenzene	0.5	U	5.00	5.11	5.00	5.35	102	107	80-120	5	30
Chloroethane	0.5	U	5.00	3.98	5.00	4.04	80	81	63-125	1	30
Chloroform	0.2	U	5.00	4.93	5.00	5.02	99	100	80-120	2	30
Chloromethane	0.5	U	5.00	3.35	5.00	3.36	67	67	55-126	0	30
Dibromochloromethane	0.5	U	5.00	4.87	5.00	5.21	97	104	78-127	7	30
1,1-Dichloroethane	0.5	U	5.00	5.09	5.00	5.16	102	103	75-120	1	30
1,2-Dichloroethane	0.2	U	5.00	4.76	5.00	4.86	95	97	72-127	2	30
1,1-Dichloroethene	0.2	U	5.00	5.40	5.00	5.52	108	110	76-120	2	30
cis-1,2-Dichloroethene	0.111		5.00	5.14	5.00	5.35	100	105	80-120	4	30
trans-1,2-Dichloroethene	0.2	U	5.00	5.27	5.00	5.45	105	109	80-120	3	30
1,2-Dichloropropane	0.5	U	5.00	5.23	5.00	5.33	105	107	80-120	2	30
cis-1,3-Dichloropropene	0.2	U	5.00	4.82	5.00	5.17	96	103	80-124	7	30
trans-1,3-Dichloropropene	0.2	U	5.00	4.81	5.00	5.24	96	105	77-121	9	30
Ethylbenzene	0.5	U	5.00	5.29	5.00	5.43	106	109	80-120	3	30
2-Hexanone	5.0	U	25	21.1	25	19.34	84	77	73-128	9	30
4-Methyl-2-pentanone	5.0	U	25	20.75	25	19.32	83	77	71-129	7	30
Methylene Chloride	0.5	U	5.00	5.04	5.00	5.04	101	101	80-120	0	30
Styrene	0.5	U	5.00	5.27	5.00	5.56	105	111	80-120	5	30
1,1,2,2-Tetrachloroethane	0.2	U	5.00	5.21	5.00	5.68	104	114	75-123	9	30
Tetrachloroethene	0.161		5.00	5.17	5.00	5.34	100	104	80-120	3	30
Toluene	0.2	U	5.00	5.26	5.00	5.44	105	109	80-120	3	30
112Trichloro122Trifluoroethane	0.5	U	5.00	5.29	5.00	5.41	106	108	75-120	2	30
1,1,1-Trichloroethane	0.5	U	5.00	4.88	5.00	4.97	98	99	79-120	2	30
1,1,2-Trichloroethane	0.2	U	5.00	5.12	5.00	5.45	102	109	80-120	6	30
Trichloroethene	0.2	U	5.00	5.19	5.00	5.36	104	107	80-120	3	30
Trichlorofluoromethane	0.5	U	5.00	4.23	5.00	4.25	85	85	71-131	0	30
Vinyl Acetate	0.5	U	12.5	12.95	12.5	12.91	104	103	63-122	0	30
Vinyl Chloride	0.157		5.00	3.97	5.00	4.02	76	77	62-128	1	30
m+p-Xylene	0.5	U	10	10.71	10	10.89	107	109	80-120	2	30
o-Xylene	0.5	U	5.00	5.18	5.00	5.30	104	106	80-120	2	30
	mg/l		mg/l	mg/l	mg/l	mg/l					
Batch number: 163210635006	Sample number(s): 8686465-8686466,8686468-8686469 UNSPK: 8686465										
Iron	0.444		1.00	1.69	1.00	1.25	125	81	75-125	30*	20
	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 09:48

Group Number: 1730794

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: 16314987171A	Sample number(s): 8686463-8686464,8686467 UNSPK: P686486									
Nitrate Nitrogen	5.63	5.00	12.07			129*		90-110		
Sulfate	377.61	500	879.85			100		90-110		
Batch number: 16315667603A	Sample number(s): 8686463-8686464,8686467 UNSPK: P686033									
Total Organic Carbon	20.89	10	32.18			113		91-113		

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: 163210635006	Sample number(s): 8686465-8686466,8686468-8686469 BKG: 8686465			
Iron	0.444	0.383	15 (1)	20
	mg/l	mg/l		
Batch number: 16314987171A	Sample number(s): 8686463-8686464,8686467 BKG: P686486			
Nitrate Nitrogen	5.63	5.60	0	15
Sulfate	377.61	377.15	0	15
Batch number: 16315667603A	Sample number(s): 8686463-8686464,8686467 BKG: P686033			
Total Organic Carbon	20.89	21.68	4*	3
	mg/l	mg/l		
Batch number: 16316133301A	Sample number(s): 8686464,8686467 BKG: 8686464			
Sulfide	2.0 U	2.0 U	0 (1)	20

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 Boeing 38
Batch number: H163231AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8686463	98	99	101	95
8686463DL	96	101	102	97
8686464	97	99	102	98
8686467	94	97	102	101

*- Outside of specification
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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 Group Number: 1730794
Reported: 11/29/2016 09:48

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 Boeing 38
Batch number: H163231AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8686467DL	96	99	102	100
8686470	100	99	98	98
8686470DL	97	99	102	94
8686471	99	103	101	98
Blank	96	98	104	96
LCS	100	98	99	97
MS	99	103	100	100
MSD	95	98	101	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 163150006A

	Propene
8686463	92
8686463DL	88
8686464	87
8686467	83
8686467DL	91
Blank	103
LCS	102
LCSD	103
Limits:	44-123

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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

eurofins | Lancaster Laboratories Environmental

Acct. # 13419 For Eurofins Lancaster Laboratories Environmental use only Group # 1730794 Sample # 8686463-71

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) VOC (38 List)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron					(5) Remarks/Comments
BOP-07i-1116	11/8/16	1420	H2O	9	X	X	X		X	X							
BOP-16i-1116	11/8/16	1315	H2O	12	X	X	X	X	X	X	X	X					
BOP-88i-1116	11/8/16	1100	H2O	12	X	X	X	X	X	X	X	X					
BOP-4-1116	11/9/16	0900	H2O	3	X												
Trip Blanks	—	—	H2O	2	X												

Page 30 of 32

(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	11/8/16 1530		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
			11-9-16 920

Relinquished by commercial carrier (circle): UPS (FedEx) Other: _____
Temperature upon Receipt: 1.2 °C
Custody Seals Intact?: (Yes) No

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be given to the SeaTac Courier. The pink copy should be retained by the client.

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 167648

Group Number(s): 1730794

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	11/09/2016 9:30
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 Timothy Cubberley (6520) at 10:55 on 11/09/2016

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	1.2	DT	Wet	Y	Bagged	N

Samples Not Intact Details

Sample ID on Label	Bottle Code	Bottle Quantity	Container Salvageable?		Comments
BOP-16i-1116	500 ml round glass- No HS - NaOH/ZnAc	1	Y	Lid cracked	

2425 New Holland Pike
Lancaster, PA 17605-2425
T : 717-656-2300
F : 717-656-2681
www.LancasterLabs.com

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 ≥ 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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REVISED

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: December 02, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 11/11/2016
Group Number: 1732119
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-72i-1116 Water	8691975
BOP-72i-1116 Total Metals Water	8691976
BOP-72i-1116 Dissolved Metals Water	8691977
BOP-73i-1116 Water	8691978
BOP-73i-1116 Total Metals Water	8691979
BOP-73i-1116 Dissolved Metals Water	8691980
BOP-74i-1116 Water	8691981
BOP-74i-1116 Total Metals Water	8691982
BOP-74i-1116 Dissolved Metals Water	8691983
BOP-76i-1116 Water	8691984
BOP-76i-1116 Total Metals Water	8691985
BOP-76i-1116 Dissolved Metals Water	8691986
BOP-77i-1116 Water	8691987
BOP-77i-1116 Total Metals Water	8691988
BOP-77i-1116 Dissolved Metals Water	8691989
Trip Blank Water	8691990

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

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Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1732119

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8691975, 8691978, 8691984

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%

Sample #s: 8691987

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample in the initial trial.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-methyl-2-pentanone	-27

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated in the initial trial. Therefore the result for the following analyte(s) is estimated:
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
2-hexanone	-27

The analysis was repeated and the continuing calibration verification standard bracketing the sample on the second trial is also outside the acceptance limits.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22
4-methyl-2-pentanone	-26
2-hexanone	-26

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance in the second trial: 2-hexanone.

Sample #s: 8691981

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-methyl-2-pentanone	-27
2-hexanone	-27

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23

Sample #s: 8691990

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
4-methyl-2-pentanone	-27
2-hexanone	-27

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Batch #: H163272AA (Sample number(s): 8691987)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 2-Hexanone

SW-846 6010C, Metals

Batch #: 163210635006 (Sample number(s): 8691976-8691977, 8691979-8691980, 8691982-8691983, 8691985-8691986, 8691988-8691989 UNSPK: P686465 BKG: P686465)

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

SW-846 6010C, Metals Dissolved

Batch #: 163210635006 (Sample number(s): 8691976-8691977, 8691979-8691980, 8691982-8691983, 8691985-8691986, 8691988-8691989 UNSPK: P686465 BKG: P686465)

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

EPA 300.0, Wet Chemistry

Sample #s: 8691987

Sample was originally analyzed within the 48 hour holding time, however bracketing continuing calibration blank (CCB) associated with the sample was unable to be quantified. Sample was reanalyzed with a acceptable CCB past hold on 11/12/2016 with a result of 0.13 mg/l.

Sample #s: 8691984

Sample was originally analyzed within the 48 hour holding time, however bracketing continuing calibration blank (CCB) associated with the sample was unable to be quantified. Sample was reanalyzed with a acceptable CCB past hold on 11/12/2016 with a result of ND.

SM 5310 C-2000, Wet Chemistry

Batch #: 16320667602A (Sample number(s): 8691978, 8691981, 8691984, 8691987 UNSPK: P691836 BKG: P691836)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Total Organic Carbon

EPA 376.1, Wet Chemistry

Batch #: 16322133302A (Sample number(s): 8691981 UNSPK: P692877 BKG: P692877)

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

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Sample Description: BOP-72i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691975
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 10:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP72

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**12**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**14**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**3.4**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.1**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**14**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**6.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.0**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of

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Sample Description: BOP-72i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691975
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 10:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP72

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor

the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated. The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%

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	**15,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**20,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**17.7**		10.0	10
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.2**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 18:39	Kerri E Legerlotz	1

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Sample Description: BOP-72i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691975
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 10:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP72

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 18:39	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163190001A	11/14/2016 12:36	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163190001A	11/15/2016 10:37	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16316987901A	11/11/2016 21:47	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16316987901A	11/11/2016 22:00	Alexandria M Lanager	10
00273	Total Organic Carbon	SM 5310 C-2000	1	16320667601B	11/15/2016 20:58	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16322133301A	11/17/2016 08:55	Satchel MacClintic	1

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Analysis Report

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Sample Description: BOP-72i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691976
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 10:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**11.7**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 11:36	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

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Analysis Report

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Sample Description: BOP-72i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691977
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 10:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**10.8**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 11:39	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

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Sample Description: BOP-73i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691978
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 13:25 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP73

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**10**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**2.4**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**5.1**		0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.4**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**3.2**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of

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Sample Description: BOP-73i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691978
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 13:25 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP73

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor

the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated. The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%

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	**32**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**4,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	100	U	100	20
07105	Ethane	74-84-0	100	U	100	20
07105	Ethene	74-85-1	100	U	100	20
07105	**Methane**	74-82-8	**2,900**		100	20
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**7.3**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.5**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 19:20	Kerri E Legerlotz	1

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Sample Description: BOP-73i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691978
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 13:25 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP73

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 19:20	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163190001A	11/14/2016 12:52	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163190001A	11/16/2016 11:43	Johanna C Kennedy	20
00368	Nitrate Nitrogen	EPA 300.0	1	16316987901A	11/11/2016 21:06	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16316987901A	11/11/2016 21:06	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16320667602A	11/15/2016 22:45	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16322133301A	11/17/2016 08:55	Satchel MacClintic	1

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Analysis Report

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Sample Description: BOP-73i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691979
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 13:25 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**10.1**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 11:42	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

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Analysis Report

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Sample Description: BOP-73i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691980
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 13:25 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**10.6**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 11:46	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

REVISED

Sample Description: BOP-74i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691981
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 14:30 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP74

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**21**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**36**		5.0	1
11996	**Carbon Disulfide**	75-15-0	**0.7**		0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	**Chloroform**	67-66-3	**1.7**		0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.5**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**9.9**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	**Methylene Chloride**	75-09-2	**0.8**		0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-methyl-2-pentanone	-27
2-hexanone	-27

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Sample Description: BOP-74i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691981
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 14:30 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP74

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23

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	**17,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**22,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.16**		0.10	1
00228	**Sulfate**	14808-79-8	**225**		100	100
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1,430**		100	100
	EPA 376.1		**mg/l**		**mg/l**	
01333	**Sulfide**	18496-25-8	**7.5**		2.0	1

Sample Comments

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

REVISED

Sample Description: BOP-74i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691981
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 14:30 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP74

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Boeing 38	SW-846 8260C	1	H163251AA	11/20/2016 13:08	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163251AA	11/20/2016 13:08	Jason M Long	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163190001A	11/14/2016 13:09	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163190001A	11/15/2016 11:11	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16316987901A	11/11/2016 22:14	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16316987901A	11/11/2016 22:42	Alexandria M Lanager	100
00273	Total Organic Carbon	SM 5310 C-2000	1	16320667602A	11/15/2016 22:58	Drew M Gerhart	100
01333	Sulfide	EPA 376.1	1	16322133302A	11/17/2016 12:30	Satchel MacClintic	1

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Analysis Report

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Sample Description: BOP-74i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691982
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 14:30 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**264**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 11:49	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

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Analysis Report

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Sample Description: BOP-74i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691983
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 14:30 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**311**	2.00	5

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635006	11/23/2016 05:52	Joanne M Gates	5
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

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Sample Description: BOP-76i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691984
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 12:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP76

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**33**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**1**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.4**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**7.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**2.5**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-Methyl-2-Pentanone	-30%
2-Hexanone	-32%

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of

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Sample Description: BOP-76i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691984
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 12:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP76

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor

the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated. The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-25%
2-Butanone	-27%

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	**9,400**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	250	U	250	50
07105	Ethane	74-84-0	250	U	250	50
07105	Ethene	74-85-1	250	U	250	50
07105	**Methane**	74-82-8	**14,000**		250	50
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
	Sample was originally analyzed within the 48 hour holding time, however bracketing continuing calibration blank (CCB) associated with the sample was unable to be quantified. Sample was reanalyzed with a acceptable CCB past hold on 11/12/2016 with a result of ND.					
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
	Sample was originally analyzed within the 48 hour holding time, however bracketing continuing calibration blank (CCB) associated with the sample was unable to be quantified. Sample was reanalyzed with a acceptable CCB past hold on 11/12/2016 with a result of ND.					
00228	**Sulfate**	14808-79-8	**21.9**		5.0	5
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**3.4**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

REVISED

Sample Description: BOP-76i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691984
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 12:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP76

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163231AA	11/18/2016 19:00	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163231AA	11/18/2016 19:00	Kerri E Legerlotz	1
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163190001A	11/14/2016 13:26	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163190001A	11/15/2016 11:28	Johanna C Kennedy	50
00368	Nitrate Nitrogen	EPA 300.0	1	16316987901A	11/12/2016 23:09	Alexandria M Lanager	1
00368	Nitrate Nitrogen	EPA 300.0	2	16316987901A	11/11/2016 23:23	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16316987901A	11/12/2016 22:41	Alexandria M Lanager	5
00273	Total Organic Carbon	SM 5310 C-2000	1	16320667602A	11/15/2016 23:11	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16322133301A	11/17/2016 08:55	Satchel MacClintic	1

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Analysis Report

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Sample Description: BOP-76i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691985
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 12:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**9.19**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 11:56	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

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Analysis Report

REVISED

Sample Description: BOP-76i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691986
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 12:20 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**8.88**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 11:59	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

REVISED

Sample Description: BOP-77i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691987
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 15:45 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**77**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	**2-Butanone**	78-93-3	**60**		5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**33**	**E**	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**2.3**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	**2-Hexanone**	591-78-6	**9.6**		5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.9**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.5**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1
Trial ID: DL						
11996	**Acetone**	67-64-1	**63**		50	10
11996	Benzene	71-43-2	2.0	U	2.0	10
11996	Bromodichloromethane	75-27-4	5.0	U	5.0	10
11996	Bromoform	75-25-2	5.0	U	5.0	10
11996	Bromomethane	74-83-9	5.0	U	5.0	10
11996	2-Butanone	78-93-3	50	U	50	10
11996	Carbon Disulfide	75-15-0	5.0	U	5.0	10
11996	Carbon Tetrachloride	56-23-5	2.0	U	2.0	10

REVISED

Sample Description: BOP-77i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691987
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 15:45 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Chlorobenzene	108-90-7	5.0	U	5.0	10
11996	Chloroethane	75-00-3	5.0	U	5.0	10
11996	Chloroform	67-66-3	2.0	U	2.0	10
11996	Chloromethane	74-87-3	5.0	U	5.0	10
11996	Dibromochloromethane	124-48-1	5.0	U	5.0	10
11996	1,1-Dichloroethane	75-34-3	5.0	U	5.0	10
11996	1,2-Dichloroethane	107-06-2	2.0	U	2.0	10
11996	1,1-Dichloroethene	75-35-4	2.0	U	2.0	10
11996	**cis-1,2-Dichloroethene**	156-59-2	**15**		2.0	10
11996	trans-1,2-Dichloroethene	156-60-5	2.0	U	2.0	10
11996	1,2-Dichloropropane	78-87-5	5.0	U	5.0	10
11996	cis-1,3-Dichloropropene	10061-01-5	2.0	U	2.0	10
11996	trans-1,3-Dichloropropene	10061-02-6	2.0	U	2.0	10
11996	Ethylbenzene	100-41-4	5.0	U	5.0	10
11996	2-Hexanone	591-78-6	50	U	50	10
11996	4-Methyl-2-pentanone	108-10-1	50	U	50	10
11996	Methylene Chloride	75-09-2	5.0	U	5.0	10
11996	Styrene	100-42-5	5.0	U	5.0	10
11996	1,1,2,2-Tetrachloroethane	79-34-5	2.0	U	2.0	10
11996	Tetrachloroethene	127-18-4	2.0	U	2.0	10
11996	Toluene	108-88-3	2.0	U	2.0	10
11996	112Trichloro122Trifluoroethane	76-13-1	5.0	U	5.0	10
11996	1,1,1-Trichloroethane	71-55-6	5.0	U	5.0	10
11996	1,1,2-Trichloroethane	79-00-5	2.0	U	2.0	10
11996	Trichloroethene	79-01-6	2.0	U	2.0	10
11996	Trichlorofluoromethane	75-69-4	5.0	U	5.0	10
11996	Vinyl Acetate	108-05-4	5.0	U	5.0	10
11996	Vinyl Chloride	75-01-4	2.0	U	2.0	10
11996	m+p-Xylene	179601-23-1	5.0	U	5.0	10
11996	o-Xylene	95-47-6	5.0	U	5.0	10

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample in the initial trial.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
4-methyl-2-pentanone	-27

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated in the initial

REVISED

Sample Description: BOP-77i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691987
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 15:45 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP77

trial. Therefore the result for the following analyte(s) is estimated:

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
2-hexanone	-27

The analysis was repeated and the continuing calibration verification standard bracketing the sample on the second trial is also outside the acceptance limits.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22
4-methyl-2-pentanone	-26
2-hexanone	-26

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance in the second trial: 2-hexanone.

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
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	**8.5**		5.0	1
07105	**Methane**	74-82-8	**20,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	1,000	U	1,000	200
07105	Ethane	74-84-0	1,000	U	1,000	200
07105	Ethene	74-85-1	1,000	U	1,000	200
07105	**Methane**	74-82-8	**29,000**		1,000	200
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	**Nitrate Nitrogen**	14797-55-8	**0.12**		0.10	1

Sample was originally analyzed within the 48 hour holding time, however bracketing continuing calibration blank (CCB) associated with the sample was unable to be quantified. Sample was reanalyzed with a acceptable CCB past hold on 11/12/2016 with a result of 0.13 mg/l.

00368	**Nitrate Nitrogen**	14797-55-8	**0.13**		0.10	1

Sample was originally analyzed within the 48 hour holding time, however bracketing continuing calibration blank (CCB) associated with the sample was unable to be quantified. Sample was reanalyzed with a acceptable CCB past hold on 11/12/2016 with a result of 0.13 mg/l.

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Analysis Report

REVISED

Sample Description: BOP-77i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691987
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 15:45 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BOP77

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00228	**Sulfate**	14808-79-8	**5.3**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**265**		10.0	10
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163251AA	11/20/2016 13:29	Jason M Long	1
11996	8260C Boeing 38	SW-846 8260C	2-DL	H163272AA	11/22/2016 16:04	Kevin A Sposito	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163251AA	11/20/2016 13:29	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	H163272AA	11/22/2016 16:04	Kevin A Sposito	10
07105	AMEE by RSK-175	RSKSOP-175 modified	1	163190001A	11/14/2016 13:43	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163190001A	11/15/2016 11:44	Johanna C Kennedy	200
00368	Nitrate Nitrogen	EPA 300.0	1	16316987901A	11/12/2016 23:22	Alexandria M Lanager	1
00368	Nitrate Nitrogen	EPA 300.0	3	16316987901A	11/11/2016 23:37	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16316987901A	11/11/2016 23:37	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16320667602A	11/15/2016 23:25	Drew M Gerhart	10
01333	Sulfide	EPA 376.1	1	16322133301A	11/17/2016 08:55	Satchel MacClintic	1

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Analysis Report

REVISED

Sample Description: BOP-77i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691988
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 15:45 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**78.0**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 12:03	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

REVISED

Sample Description: BOP-77i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691989
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016 15:45 by EMW The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**76.7**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635006	11/22/2016 12:13	Eric L Eby	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635006	11/20/2016 12:00	James L Mertz	1

REVISED

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691990
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016

The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BPT11

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
4-methyl-2-pentanone	-27
2-hexanone	-27

REVISED

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8691990
LL Group # 1732119
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/10/2016

The Boeing Company

Submitted: 11/11/2016 09:25
Reported: 12/02/2016 14:57

BPT11

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163251AA	11/20/2016 12:48	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163251AA	11/20/2016 12:48	Jason M Long	1

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

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 ug/l		LOQ ug/l
Batch number: H163231AA	Sample number(s): 8691975,8691978,8691984		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H163251AA	Sample number(s): 8691981,8691987,8691990		

*- Outside of specification
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(2) The unspiked result was more than four times the spike added.
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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H163272AA	Sample number(s): 8691987		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 163190001A	Sample number(s): 8691975,8691978,8691981,8691984,8691987		
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 163210635006	Sample number(s): 8691976-8691977,8691979-8691980,8691982-8691983,8691985-8691986,8691988-8691989		
Iron	0.400	U	0.400
Batch number: 16316987901A	Sample number(s): 8691975,8691978,8691981,8691984,8691987		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16320667601B	Sample number(s): 8691975		
Total Organic Carbon	1.0	U	1.0
Batch number: 16320667602A	Sample number(s): 8691978,8691981,8691984,8691987		

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

Method Blank (continued)

Analysis Name	Result		LOQ
	mg/l		mg/l
Total Organic Carbon	1.0	U	1.0
Batch number: 16322133301A	Sample number(s): 8691975,8691978,8691984,8691987		
Sulfide	2.0	U	2.0
Batch number: 16322133302A	Sample number(s): 8691981		
Sulfide	2.0	U	2.0

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: H163231AA	Sample number(s): 8691975,8691978,8691984								
Acetone	37.5	32.17			86		65-130		
Benzene	5.00	5.45			109		80-120		
Bromodichloromethane	5.00	5.40			108		80-120		
Bromoform	5.00	4.85			97		62-128		
Bromomethane	5.00	4.07			81		62-131		
2-Butanone	37.5	30.57			82		66-135		
Carbon Disulfide	5.00	5.40			108		65-120		
Carbon Tetrachloride	5.00	5.13			103		79-124		
Chlorobenzene	5.00	5.29			106		80-120		
Chloroethane	5.00	4.04			81		63-125		
Chloroform	5.00	5.09			102		80-120		
Chloromethane	5.00	3.42			68		55-126		
Dibromochloromethane	5.00	5.13			103		78-127		
1,1-Dichloroethane	5.00	5.33			107		75-120		
1,2-Dichloroethane	5.00	4.85			97		72-127		
1,1-Dichloroethene	5.00	5.43			109		76-120		
cis-1,2-Dichloroethene	5.00	5.38			108		80-120		
trans-1,2-Dichloroethene	5.00	5.44			109		80-120		
1,2-Dichloropropane	5.00	5.49			110		80-120		
cis-1,3-Dichloropropene	5.00	5.31			106		80-124		
trans-1,3-Dichloropropene	5.00	5.30			106		77-121		
Ethylbenzene	5.00	5.30			106		80-120		
2-Hexanone	25	19			76		73-128		
4-Methyl-2-pentanone	25	24.06			96		71-129		
Methylene Chloride	5.00	5.33			107		80-120		
Styrene	5.00	5.55			111		80-120		
1,1,2,2-Tetrachloroethane	5.00	5.57			111		75-123		
Tetrachloroethene	5.00	4.99			100		80-120		
Toluene	5.00	5.41			108		80-120		
112Trichloro122Trifluoroethane	5.00	5.29			106		75-120		
1,1,1-Trichloroethane	5.00	4.94			99		79-120		

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

LCS/LCSD (continued)

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
1,1,2-Trichloroethane	5.00	5.23			105		80-120		
Trichloroethene	5.00	5.39			108		80-120		
Trichlorofluoromethane	5.00	4.12			82		71-131		
Vinyl Acetate	12.5	12.42			99		63-122		
Vinyl Chloride	5.00	3.86			77		62-128		
m+p-Xylene	10	10.73			107		80-120		
o-Xylene	5.00	5.27			105		80-120		
Batch number: H163251AA	Sample number(s): 8691981,8691987,8691990								
Acetone	37.5	31.19	37.5	31.53	83	84	65-130	1	30
Benzene	5.00	5.46	5.00	5.54	109	111	80-120	2	30
Bromodichloromethane	5.00	5.47	5.00	5.54	109	111	80-120	1	30
Bromoform	5.00	4.96	5.00	5.34	99	107	62-128	7	30
Bromomethane	5.00	4.84	5.00	4.89	97	98	62-131	1	30
2-Butanone	37.5	31.96	37.5	34.13	85	91	66-135	7	30
Carbon Disulfide	5.00	5.50	5.00	5.51	110	110	65-120	0	30
Carbon Tetrachloride	5.00	5.17	5.00	5.23	103	105	79-124	1	30
Chlorobenzene	5.00	5.28	5.00	5.41	106	108	80-120	2	30
Chloroethane	5.00	4.69	5.00	4.71	94	94	63-125	1	30
Chloroform	5.00	5.16	5.00	5.20	103	104	80-120	1	30
Chloromethane	5.00	4.45	5.00	4.55	89	91	55-126	2	30
Dibromochloromethane	5.00	5.42	5.00	5.55	108	111	78-127	2	30
1,1-Dichloroethane	5.00	5.28	5.00	5.34	106	107	75-120	1	30
1,2-Dichloroethane	5.00	5.15	5.00	5.12	103	102	72-127	1	30
1,1-Dichloroethene	5.00	5.63	5.00	5.64	113	113	76-120	0	30
cis-1,2-Dichloroethene	5.00	5.40	5.00	5.46	108	109	80-120	1	30
trans-1,2-Dichloroethene	5.00	5.53	5.00	5.66	111	113	80-120	2	30
1,2-Dichloropropane	5.00	5.49	5.00	5.57	110	111	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.47	5.00	5.61	109	112	80-124	3	30
trans-1,3-Dichloropropene	5.00	5.64	5.00	5.94	113	119	77-121	5	30
Ethylbenzene	5.00	5.21	5.00	5.44	104	109	80-120	4	30
2-Hexanone	25	19.59	25	21.64	78	87	73-128	10	30
4-Methyl-2-pentanone	25	19.68	25	21.24	79	85	71-129	8	30
Methylene Chloride	5.00	5.46	5.00	5.48	109	110	80-120	0	30
Styrene	5.00	5.48	5.00	5.70	110	114	80-120	4	30
1,1,2,2-Tetrachloroethane	5.00	5.84	5.00	6.06	117	121	75-123	4	30
Tetrachloroethene	5.00	5.04	5.00	5.26	101	105	80-120	4	30
Toluene	5.00	5.31	5.00	5.55	106	111	80-120	4	30
112Trichloro122Trifluoroethane	5.00	5.36	5.00	5.46	107	109	75-120	2	30
1,1,1-Trichloroethane	5.00	4.99	5.00	5.08	100	102	79-120	2	30
1,1,2-Trichloroethane	5.00	5.52	5.00	5.64	110	113	80-120	2	30
Trichloroethene	5.00	5.37	5.00	5.57	107	111	80-120	4	30
Trichlorofluoromethane	5.00	4.90	5.00	4.82	98	96	71-131	2	30
Vinyl Acetate	12.5	14.05	12.5	14.24	112	114	63-122	1	30
Vinyl Chloride	5.00	4.81	5.00	4.84	96	97	62-128	1	30
m+p-Xylene	10	10.55	10	11.05	106	111	80-120	5	30
o-Xylene	5.00	5.15	5.00	5.32	103	106	80-120	3	30

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

LCS/LCSD (continued)

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: H163272AA	Sample number(s): 8691987								
Acetone	37.5	31.05	37.5	29.8	83	79	65-130	4	30
Benzene	5.00	5.21	5.00	5.39	104	108	80-120	3	30
Bromodichloromethane	5.00	5.30	5.00	5.34	106	107	80-120	1	30
Bromoform	5.00	4.61	5.00	4.97	92	99	62-128	7	30
Bromomethane	5.00	6.03	5.00	6.06	121	121	62-131	0	30
2-Butanone	37.5	28.03	37.5	29.1	75	78	66-135	4	30
Carbon Disulfide	5.00	4.36	5.00	4.57	87	91	65-120	5	30
Carbon Tetrachloride	5.00	4.85	5.00	5.12	97	102	79-124	6	30
Chlorobenzene	5.00	5.03	5.00	5.27	101	105	80-120	5	30
Chloroethane	5.00	5.82	5.00	5.91	116	118	63-125	2	30
Chloroform	5.00	5.02	5.00	5.12	100	102	80-120	2	30
Chloromethane	5.00	5.19	5.00	5.15	104	103	55-126	1	30
Dibromochloromethane	5.00	4.88	5.00	5.19	98	104	78-127	6	30
1,1-Dichloroethane	5.00	5.02	5.00	5.07	100	101	75-120	1	30
1,2-Dichloroethane	5.00	4.91	5.00	4.95	98	99	72-127	1	30
1,1-Dichloroethene	5.00	5.66	5.00	5.13	113	103	76-120	10	30
cis-1,2-Dichloroethene	5.00	5.11	5.00	5.27	102	105	80-120	3	30
trans-1,2-Dichloroethene	5.00	5.12	5.00	5.34	102	107	80-120	4	30
1,2-Dichloropropane	5.00	5.33	5.00	5.40	107	108	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.37	5.00	5.33	107	107	80-124	1	30
trans-1,3-Dichloropropene	5.00	5.21	5.00	5.55	104	111	77-121	6	30
Ethylbenzene	5.00	5.03	5.00	5.33	101	107	80-120	6	30
2-Hexanone	25	17.38	25	18.12	70*	72*	73-128	4	30
4-Methyl-2-pentanone	25	22.12	25	18.28	88	73	71-129	19	30
Methylene Chloride	5.00	5.05	5.00	5.21	101	104	80-120	3	30
Styrene	5.00	5.32	5.00	5.60	106	112	80-120	5	30
1,1,2,2-Tetrachloroethane	5.00	5.32	5.00	5.50	106	110	75-123	3	30
Tetrachloroethene	5.00	4.71	5.00	5.10	94	102	80-120	8	30
Toluene	5.00	5.02	5.00	5.30	100	106	80-120	5	30
112Trichloro122Trifluoroethane	5.00	5.49	5.00	4.87	110	97	75-120	12	30
1,1,1-Trichloroethane	5.00	4.64	5.00	4.90	93	98	79-120	5	30
1,1,2-Trichloroethane	5.00	5.16	5.00	5.43	103	109	80-120	5	30
Trichloroethene	5.00	5.20	5.00	5.39	104	108	80-120	4	30
Trichlorofluoromethane	5.00	5.66	5.00	5.47	113	109	71-131	3	30
Vinyl Acetate	12.5	12.77	12.5	12.33	102	99	63-122	3	30
Vinyl Chloride	5.00	5.54	5.00	5.80	111	116	62-128	5	30
m+p-Xylene	10	10.02	10	10.93	100	109	80-120	9	30
o-Xylene	5.00	5.03	5.00	5.28	101	106	80-120	5	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 163190001A	Sample number(s): 8691975,8691978,8691981,8691984,8691987								
Acetylene	51.2	49.44	51.2	52.4	97	102	61-148	6	20
Ethane	59.2	59.23	59.2	61.3	100	104	85-115	3	20
Ethene	60.8	60.25	60.8	62.72	99	103	83-115	4	20
Methane	59.8	62.36	59.8	64.55	104	108	85-115	3	20

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REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

LCS/LCSD (continued)

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					
	mg/l	mg/l	mg/l	mg/l					
Batch number: 163210635006	Sample number(s): 8691976-8691977,8691979-8691980,8691982-8691983,8691985-8691986,8691988-8691989								
Iron	1.00	1.03			103		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16316987901A	Sample number(s): 8691975,8691978,8691981,8691984,8691987								
Nitrate Nitrogen	0.750	0.765			102		90-110		
Sulfate	7.50	7.60			101		90-110		
Batch number: 16320667601B	Sample number(s): 8691975								
Total Organic Carbon	25	24.96			100		91-113		
Batch number: 16320667602A	Sample number(s): 8691978,8691981,8691984,8691987								
Total Organic Carbon	25	24.92			100		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16322133301A	Sample number(s): 8691975,8691978,8691984,8691987								
Sulfide	20	20.08	20	20.29	100	101	80-120	1	4
Batch number: 16322133302A	Sample number(s): 8691981								
Sulfide	20	20.29			101		80-120		

MS/MSD

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

Analysis Name	Unspiked Conc		MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l		ug/l	ug/l	ug/l	ug/l					
Batch number: H163231AA	Sample number(s): 8691975,8691978,8691984 UNSPK: P690207										
Acetone	5.0	U	37.5	31.97	37.5	31.34	85	84	65-130	2	30
Benzene	0.2	U	5.00	5.35	5.00	5.30	107	106	80-120	1	30
Bromodichloromethane	0.5	U	5.00	5.11	5.00	5.27	102	105	80-120	3	30
Bromoform	0.5	U	5.00	4.40	5.00	4.93	88	99	62-128	11	30
Bromomethane	0.5	U	5.00	4.05	5.00	3.98	81	80	62-131	2	30
2-Butanone	5.0	U	37.5	32.24	37.5	30.73	86	82	66-135	5	30
Carbon Disulfide	0.5	U	5.00	5.38	5.00	5.46	108	109	65-120	1	30
Carbon Tetrachloride	0.2	U	5.00	5.04	5.00	5.23	101	105	79-124	4	30
Chlorobenzene	0.5	U	5.00	5.11	5.00	5.35	102	107	80-120	5	30
Chloroethane	0.5	U	5.00	3.98	5.00	4.04	80	81	63-125	1	30
Chloroform	0.2	U	5.00	4.93	5.00	5.02	99	100	80-120	2	30
Chloromethane	0.5	U	5.00	3.35	5.00	3.36	67	67	55-126	0	30
Dibromochloromethane	0.5	U	5.00	4.87	5.00	5.21	97	104	78-127	7	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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

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
1,1-Dichloroethane	0.5	U	5.00	5.09	5.00	5.16	102	103	75-120	1	30
1,2-Dichloroethane	0.2	U	5.00	4.76	5.00	4.86	95	97	72-127	2	30
1,1-Dichloroethene	0.2	U	5.00	5.40	5.00	5.52	108	110	76-120	2	30
cis-1,2-Dichloroethene	0.111		5.00	5.14	5.00	5.35	100	105	80-120	4	30
trans-1,2-Dichloroethene	0.2	U	5.00	5.27	5.00	5.45	105	109	80-120	3	30
1,2-Dichloropropane	0.5	U	5.00	5.23	5.00	5.33	105	107	80-120	2	30
cis-1,3-Dichloropropene	0.2	U	5.00	4.82	5.00	5.17	96	103	80-124	7	30
trans-1,3-Dichloropropene	0.2	U	5.00	4.81	5.00	5.24	96	105	77-121	9	30
Ethylbenzene	0.5	U	5.00	5.29	5.00	5.43	106	109	80-120	3	30
2-Hexanone	5.0	U	25	21.1	25	19.34	84	77	73-128	9	30
4-Methyl-2-pentanone	5.0	U	25	20.75	25	19.32	83	77	71-129	7	30
Methylene Chloride	0.5	U	5.00	5.04	5.00	5.04	101	101	80-120	0	30
Styrene	0.5	U	5.00	5.27	5.00	5.56	105	111	80-120	5	30
1,1,2,2-Tetrachloroethane	0.2	U	5.00	5.21	5.00	5.68	104	114	75-123	9	30
Tetrachloroethene	0.161		5.00	5.17	5.00	5.34	100	104	80-120	3	30
Toluene	0.2	U	5.00	5.26	5.00	5.44	105	109	80-120	3	30
112Trichloro122Trifluoroethane	0.5	U	5.00	5.29	5.00	5.41	106	108	75-120	2	30
1,1,1-Trichloroethane	0.5	U	5.00	4.88	5.00	4.97	98	99	79-120	2	30
1,1,2-Trichloroethane	0.2	U	5.00	5.12	5.00	5.45	102	109	80-120	6	30
Trichloroethene	0.2	U	5.00	5.19	5.00	5.36	104	107	80-120	3	30
Trichlorofluoromethane	0.5	U	5.00	4.23	5.00	4.25	85	85	71-131	0	30
Vinyl Acetate	0.5	U	12.5	12.95	12.5	12.91	104	103	63-122	0	30
Vinyl Chloride	0.157		5.00	3.97	5.00	4.02	76	77	62-128	1	30
m+p-Xylene	0.5	U	10	10.71	10	10.89	107	109	80-120	2	30
o-Xylene	0.5	U	5.00	5.18	5.00	5.30	104	106	80-120	2	30
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 163210635006	Sample number(s): 8691976-8691977,8691979-8691980,8691982-8691983,8691985-8691986,8691988-8691989 UNSPK: P686465										
Iron	0.444		1.00	1.69	1.00	1.25	125	81	75-125	30*	20
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 16316987901A	Sample number(s): 8691975,8691978,8691981,8691984,8691987 UNSPK: 8691978										
Nitrate Nitrogen	0.10	U	1.00	1.02			102		90-110		
Sulfate	7.34		10	16.81			95		90-110		
Batch number: 16320667601B	Sample number(s): 8691975 UNSPK: P690481										
Total Organic Carbon	17.29		10	26.89			96		91-113		
Batch number: 16320667602A	Sample number(s): 8691978,8691981,8691984,8691987 UNSPK: P691836										
Total Organic Carbon	1.99		10	12.32			103		91-113		
	mg/l		**mg/l**	**mg/l**	**mg/l**	**mg/l**					
Batch number: 16322133302A	Sample number(s): 8691981 UNSPK: P692877										

*- 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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

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
Sulfide	2.0 U	10	8.72	10	9.43	87	94	80-120	8*	6

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: 163210635006	Sample number(s): 8691976-8691977,8691979-8691980,8691982-8691983,8691985-8691986,8691988-8691989 BKG: P686465			
Iron	0.444	0.383	15 (1)	20
	mg/l	**mg/l**		
Batch number: 16316987901A	Sample number(s): 8691975,8691978,8691981,8691984,8691987 BKG: 8691978			
Nitrate Nitrogen	0.10 U	0.10 U	0 (1)	15
Sulfate	7.34	7.38	1	15
Batch number: 16320667601B	Sample number(s): 8691975 BKG: P690481			
Total Organic Carbon	17.29	17.54	1	3
Batch number: 16320667602A	Sample number(s): 8691978,8691981,8691984,8691987 BKG: P691836			
Total Organic Carbon	1.99	2.30	14* (1)	3
	mg/l	**mg/l**		
Batch number: 16322133302A	Sample number(s): 8691981 BKG: P692877			
Sulfide	2.0 U	2.0 U	0 (1)	20

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 Boeing 38
Batch number: H163231AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8691975	95	95	104	97
8691978	97	97	100	96
8691984	95	98	100	96
Blank	96	98	104	96
LCS	100	98	99	97

*- 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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Reported: 12/02/2016 14:57

Group Number: 1732119

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 Boeing 38
Batch number: H163231AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
MS	99	103	100	100
MSD	95	98	101	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H163251AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8691981	97	102	101	102
8691987	94	103	102	101
8691990	96	98	102	95
Blank	97	102	101	97
LCS	97	104	99	99
LCSD	97	98	101	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H163272AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8691987DL	100	102	99	97
Blank	98	103	100	95
LCS	100	104	97	101
LCSD	97	99	101	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 163190001A

	Propene
8691975	86
8691975DL	86
8691978	85
8691978DL	93
8691981	74
8691981DL	86
8691984	72
8691984DL	108
8691987	70
8691987DL	108
Blank	102
LCS	103
LCSD	104

*- 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.

REVISED

Quality Control Summary

Client Name: The Boeing Company
Group Number: 1732119
Reported: 12/02/2016 14:57

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: 163190001A

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

eurofins | Lancaster Laboratories Environmental

Acct. # 13419 For Eurofins Lancaster Laboratories Environmental use only Group # 1732119 Sample # 8691975-90

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing Of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) VOC (38 list)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron					(5) Remarks/Comments
BOP-72i-1116	11/10/16	1020	H2O	12	X	X	X	X	X	X	X	X					
BOP-73i-1116		1325		12	X	X	X	X	X	X	X	X					
BOP-74i-1116		1430		12	X	X	X	X	X	X	X	X					
BOP-76i-1116		1220		12	X	X	X	X	X	X	X	X					
BOP-77i-1116	↓	1545		12	X	X	X	X	X	X	X	X					
Trip Blanks	—	—	↓	2	X												

(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	11/10/16 1700		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 11-11-16 @ 925

Relinquished by commercial carrier (circle): UPS (FedEx) Other: _____

Temperature upon Receipt: 1.5 °C

Custody Seals Intact?: (Yes) No

(7)

Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300 7063 0913

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be given to the SeaTac Courier. The pink copy should be retained by the client.

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 167941

Group Number(s): 1732119

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	11/11/2016 9:25
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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 Joseph Huber (7831) at 10:06 on 11/11/2016

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	DT146	1.5	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T : 717-656-2300
F : 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: November 23, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 11/12/2016
Group Number: 1732377
PO Number: 0025116.115.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-80i-1116 Water	8693291
BOP-80i-1116 Total Metals Water	8693292
BOP-80i-1116 Dissolved Metals Water	8693293
BOP-81i-1116 Water	8693294
BOP-81i-1116 Total Metals Water	8693295
BOP-81i-1116 Dissolved Metals Water	8693296
Trip Blank Water	8693297

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1732377

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8693297

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
4-methyl-2-pentanone	-27
2-hexanone	-27

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8693291, 8693294

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
4-methyl-2-pentanone	-27
2-hexanone	-27

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
acetone.

SW-846 6010C, Metals

Batch #: 163210635008 (Sample number(s): 8693292-8693293, 8693295-8693296 UNSPK: 8693292 BKG: 8693292)

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

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

SW-846 6010C, Metals Dissolved

Batch #: 163210635008 (Sample number(s): 8693292-8693293, 8693295-8693296 UNSPK: 8693292 BKG: 8693292)

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

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

EPA 300.0, Wet Chemistry

Batch #: 16317972601B (Sample number(s): 8693291, 8693294 UNSPK: P693247 BKG: P693247)

The recovery(ies) for the following analyte(s) in the MS was outside the acceptance window: Nitrate Nitrogen

SM 5310 C-2000, Wet Chemistry

Batch #: 16320667602B (Sample number(s): 8693291, 8693294 UNSPK: P692381 BKG: P692381)

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

EPA 376.1, Wet Chemistry

Batch #: 16322133302A (Sample number(s): 8693291, 8693294 UNSPK: P692877 BKG: P692877)

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

Sample Description: BOP-80i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693291
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 09:50 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BP80I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**9.2**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	**1,1-Dichloroethane**	75-34-3	**0.7**		0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	**trans-1,2-Dichloroethene**	156-60-5	**0.5**		0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
4-methyl-2-pentanone	-27

Sample Description: BOP-80i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693291
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 09:50 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BP80I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	2-hexanone -27					

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated:
acetone.

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	**10**		5.0	1
07105	Ethene	74-85-1	5.0	U	5.0	1
07105	**Methane**	74-82-8	**14,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**20,000**		500	100
Wet Chemistry	**EPA 300.0**	**mg/l**			**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	Sulfate	14808-79-8	1.0	U	1.0	1
	SM 5310 C-2000	**mg/l**			**mg/l**	
00273	**Total Organic Carbon**	n.a.	**2.7**		1.0	1
	EPA 376.1	**mg/l**			**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163251AA	11/20/2016 14:30	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163251AA	11/20/2016 14:30	Jason M Long	1

Sample Description: BOP-80i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693291
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 09:50 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BP80I

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	163190001A	11/14/2016 14:12	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163190001A	11/15/2016 12:01	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16317972601B	11/12/2016 18:35	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16317972601B	11/12/2016 18:35	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16320667602B	11/16/2016 01:51	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16322133302A	11/17/2016 12:30	Satchel MacClintic	1

Sample Description: BOP-80i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693292
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 09:50 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**12.7**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635008	11/23/2016 10:36	Joanne M Gates	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635008	11/22/2016 00:01	James L Mertz	1

Sample Description: BOP-80i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693293
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 09:50 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**12.2**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635008	11/23/2016 10:56	Joanne M Gates	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635008	11/22/2016 00:01	James L Mertz	1

Sample Description: BOP-81i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693294
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 10:55 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BP81I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**22**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**0.3**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
4-methyl-2-pentanone	-27
2-hexanone	-27

Sample Description: BOP-81i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693294
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 10:55 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BP81I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
	A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.					
	The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated: acetone.					
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	**15,000**	**E**	5.0	1
Trial ID: DL						
07105	Acetylene	74-86-2	500	U	500	100
07105	Ethane	74-84-0	500	U	500	100
07105	Ethene	74-85-1	500	U	500	100
07105	**Methane**	74-82-8	**23,000**		500	100
Wet Chemistry	**EPA 300.0**		**mg/l**		**mg/l**	
00368	Nitrate Nitrogen	14797-55-8	0.10	U	0.10	1
00228	**Sulfate**	14808-79-8	**1.2**		1.0	1
	SM 5310 C-2000		**mg/l**		**mg/l**	
00273	**Total Organic Carbon**	n.a.	**1.3**		1.0	1
	EPA 376.1		**mg/l**		**mg/l**	
01333	Sulfide	18496-25-8	2.0	U	2.0	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163251AA	11/20/2016 14:50	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163251AA	11/20/2016 14:50	Jason M Long	1

Sample Description: BOP-81i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693294
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 10:55 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BP81I

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	163190001A	11/14/2016 14:29	Johanna C Kennedy	1
07105	AMEE by RSK-175	RSKSOP-175 modified	2-DL	163190001A	11/15/2016 12:18	Johanna C Kennedy	100
00368	Nitrate Nitrogen	EPA 300.0	1	16317972601B	11/12/2016 19:06	Alexandria M Lanager	1
00228	Sulfate	EPA 300.0	1	16317972601B	11/12/2016 19:06	Alexandria M Lanager	1
00273	Total Organic Carbon	SM 5310 C-2000	1	16320667602B	11/16/2016 02:04	Drew M Gerhart	1
01333	Sulfide	EPA 376.1	1	16322133302A	11/17/2016 12:30	Satchel MacClintic	1

Sample Description: BOP-81i-1116 Total Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693295
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 10:55 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**	**mg/l**	**mg/l**	
01754	**Iron**	7439-89-6	**7.23**	0.400	1

Sample Comments

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010C	1	163210635008	11/23/2016 11:00	Joanne M Gates	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635008	11/22/2016 00:01	James L Mertz	1

Sample Description: BOP-81i-1116 Dissolved Metals Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693296
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016 10:55 by EMW The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010C**		mg/l	mg/l	
01754	**Iron**	7439-89-6	**6.52**	0.400	1

Sample Comments

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
01754	Iron	SW-846 6010C	1	163210635008	11/23/2016 11:10	Joanne M Gates	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	163210635008	11/22/2016 00:01	James L Mertz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693297
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016

The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BPT12

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
acetone	-25
2-butanone	-23
4-methyl-2-pentanone	-27
2-hexanone	-27

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8693297
LL Group # 1732377
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/11/2016

The Boeing Company

Submitted: 11/12/2016 11:00
Reported: 11/23/2016 16:03

BPT12

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163251AA	11/20/2016 14:09	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163251AA	11/20/2016 14:09	Jason M Long	1

Quality Control Summary

Client Name: The Boeing Company Group Number: 1732377
Reported: 11/23/2016 16:03

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 ug/l		LOQ ug/l
Batch number: H163251AA	Sample number(s): 8693291,8693294,8693297		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: 163190001A	Sample number(s): 8693291,8693294		

*- 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: 11/23/2016 16:03

Group Number: 1732377

Method Blank (continued)

Analysis Name	Result		LOQ
	ug/l		ug/l
Acetylene	5.0	U	5.0
Ethane	5.0	U	5.0
Ethene	5.0	U	5.0
Methane	5.0	U	5.0
	mg/l		mg/l
Batch number: 163210635008	Sample number(s): 8693292-8693293,8693295-8693296		
Iron	0.400	U	0.400
Batch number: 16317972601B	Sample number(s): 8693291,8693294		
Nitrate Nitrogen	0.10	U	0.10
Sulfate	1.0	U	1.0
Batch number: 16320667602B	Sample number(s): 8693291,8693294		
Total Organic Carbon	1.0	U	1.0
Batch number: 16322133302A	Sample number(s): 8693291,8693294		
Sulfide	2.0	U	2.0

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: H163251AA	Sample number(s): 8693291,8693294,8693297								
Acetone	37.5	31.19	37.5	31.53	83	84	65-130	1	30
Benzene	5.00	5.46	5.00	5.54	109	111	80-120	2	30
Bromodichloromethane	5.00	5.47	5.00	5.54	109	111	80-120	1	30
Bromoform	5.00	4.96	5.00	5.34	99	107	62-128	7	30
Bromomethane	5.00	4.84	5.00	4.89	97	98	62-131	1	30
2-Butanone	37.5	31.96	37.5	34.13	85	91	66-135	7	30
Carbon Disulfide	5.00	5.50	5.00	5.51	110	110	65-120	0	30
Carbon Tetrachloride	5.00	5.17	5.00	5.23	103	105	79-124	1	30
Chlorobenzene	5.00	5.28	5.00	5.41	106	108	80-120	2	30
Chloroethane	5.00	4.69	5.00	4.71	94	94	63-125	1	30
Chloroform	5.00	5.16	5.00	5.20	103	104	80-120	1	30
Chloromethane	5.00	4.45	5.00	4.55	89	91	55-126	2	30
Dibromochloromethane	5.00	5.42	5.00	5.55	108	111	78-127	2	30
1,1-Dichloroethane	5.00	5.28	5.00	5.34	106	107	75-120	1	30
1,2-Dichloroethane	5.00	5.15	5.00	5.12	103	102	72-127	1	30
1,1-Dichloroethene	5.00	5.63	5.00	5.64	113	113	76-120	0	30
cis-1,2-Dichloroethene	5.00	5.40	5.00	5.46	108	109	80-120	1	30
trans-1,2-Dichloroethene	5.00	5.53	5.00	5.66	111	113	80-120	2	30
1,2-Dichloropropane	5.00	5.49	5.00	5.57	110	111	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.47	5.00	5.61	109	112	80-124	3	30
trans-1,3-Dichloropropene	5.00	5.64	5.00	5.94	113	119	77-121	5	30
Ethylbenzene	5.00	5.21	5.00	5.44	104	109	80-120	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: 11/23/2016 16:03

Group Number: 1732377

LCS/LCSD (continued)

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					
2-Hexanone	25	19.59	25	21.64	78	87	73-128	10	30
4-Methyl-2-pentanone	25	19.68	25	21.24	79	85	71-129	8	30
Methylene Chloride	5.00	5.46	5.00	5.48	109	110	80-120	0	30
Styrene	5.00	5.48	5.00	5.70	110	114	80-120	4	30
1,1,2,2-Tetrachloroethane	5.00	5.84	5.00	6.06	117	121	75-123	4	30
Tetrachloroethene	5.00	5.04	5.00	5.26	101	105	80-120	4	30
Toluene	5.00	5.31	5.00	5.55	106	111	80-120	4	30
112Trichloro122Trifluoroethane	5.00	5.36	5.00	5.46	107	109	75-120	2	30
1,1,1-Trichloroethane	5.00	4.99	5.00	5.08	100	102	79-120	2	30
1,1,2-Trichloroethane	5.00	5.52	5.00	5.64	110	113	80-120	2	30
Trichloroethene	5.00	5.37	5.00	5.57	107	111	80-120	4	30
Trichlorofluoromethane	5.00	4.90	5.00	4.82	98	96	71-131	2	30
Vinyl Acetate	12.5	14.05	12.5	14.24	112	114	63-122	1	30
Vinyl Chloride	5.00	4.81	5.00	4.84	96	97	62-128	1	30
m+p-Xylene	10	10.55	10	11.05	106	111	80-120	5	30
o-Xylene	5.00	5.15	5.00	5.32	103	106	80-120	3	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 163190001A	Sample number(s): 8693291,8693294								
Acetylene	51.2	49.44	51.2	52.4	97	102	61-148	6	20
Ethane	59.2	59.23	59.2	61.3	100	104	85-115	3	20
Ethene	60.8	60.25	60.8	62.72	99	103	83-115	4	20
Methane	59.8	62.36	59.8	64.55	104	108	85-115	3	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 163210635008	Sample number(s): 8693292-8693293,8693295-8693296								
Iron	1.00	0.962			96		80-120		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16317972601B	Sample number(s): 8693291,8693294								
Nitrate Nitrogen	0.750	0.760			101		90-110		
Sulfate	7.50	7.52			100		90-110		
Batch number: 16320667602B	Sample number(s): 8693291,8693294								
Total Organic Carbon	25	24.92			100		91-113		
	mg/l	mg/l	mg/l	mg/l					
Batch number: 16322133302A	Sample number(s): 8693291,8693294								
Sulfide	20	20.29			101		80-120		

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: 11/23/2016 16:03

Group Number: 1732377

MS/MSD

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

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 163210635008	Sample number(s): 8693292-8693293,8693295-8693296 UNSPK: 8693292									
Iron	12.72	1.00	15.74	1.00	20.73	302 (2)	801 (2)	75-125	27*	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16317972601B	Sample number(s): 8693291,8693294 UNSPK: P693247									
Nitrate Nitrogen	22.96	5.00	28.86			118 (2)		90-110		
Sulfate	297.86	500	820.12			104		90-110		
Batch number: 16320667602B	Sample number(s): 8693291,8693294 UNSPK: P692381									
Total Organic Carbon	1.17	10	10.13			90*		91-113		
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 16322133302A	Sample number(s): 8693291,8693294 UNSPK: P692877									
Sulfide	2.0 U	10	8.72	10	9.43	87	94	80-120	8*	6

Laboratory Duplicate

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

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/l	mg/l		
Batch number: 163210635008	Sample number(s): 8693292-8693293,8693295-8693296 BKG: 8693292			
Iron	12.72	12.71	0	20
	mg/l	mg/l		
Batch number: 16317972601B	Sample number(s): 8693291,8693294 BKG: P693247			
Nitrate Nitrogen	22.96	23.11	1	15
Sulfate	297.86	297.57	0	15
Batch number: 16320667602B	Sample number(s): 8693291,8693294 BKG: P692381			
Total Organic Carbon	1.17	1.0 U	200* (1)	3
	mg/l	mg/l		
Batch number: 16322133302A	Sample number(s): 8693291,8693294 BKG: P692877			
Sulfide	2.0 U	2.0 U	0 (1)	20

*- 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
Group Number: 1732377
Reported: 11/23/2016 16:03

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 Boeing 38
Batch number: H163251AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8693291	96	103	102	100
8693294	97	96	101	98
8693297	97	105	100	96
Blank	97	102	101	97
LCS	97	104	99	99
LCSD	97	98	101	99
Limits:	77-114	74-113	77-110	78-110

Analysis Name: AMEE by RSK-175
Batch number: 163190001A

	Propene
8693291	74
8693291DL	97
8693294	74
8693294DL	105
Blank	102
LCS	103
LCSD	104
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

eurofins | Lancaster Laboratories Environmental

Acct. # 1341 9 | For Eurofins Lancaster Laboratories Environmental use only Group # 1732377 Sample # 8643291-97

Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

2 Sample Identification / 3 Matrix / 4 Analyses Requested / 5 Remarks/Comments

Sample Identification	Collected Date	Collected Time	Matrix	No. of Containers	VOC (38 List)	TOC	Sulfate	Sulfide	Nitrate	AMEE	Total Iron	Dissolved Iron	Remarks/Comments
BOP-80i-1116	11/11/16	0950	H_2O	12	X	X	X	X	X	X	X	X	
BOP-81i-1116	11/11/16	1055	H_2O	12	X	X	X	X	X	X	X	X	
Trip Blanks	—	—	H_2O	2	X								

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

7

Relinquished by: [signature]	Date/Time 11/11/16 1400	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 11/12/16 1100
Relinquished by commercial carrier (circle): UPS FedEx Other:		Temperature upon Receipt: 0-3 °C	
		Custody Seals Intact?: (Yes) No	

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Sample Administration Receipt Documentation Log

Doc Log ID: 168063

Group Number(s): 1732377

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	11/12/2016 11:00
Number of Packages:	1	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:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
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 Krista Abel (3058) at 11:20 on 11/12/2016

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	DT146	0.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: November 25, 2016

Project: Portland 025116.116.412/TGA

Submittal Date: 11/17/2016
Group Number: 1734526
PO Number: 0025116.116.412
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-07d(148)-1116 Water	8702331
BOP-07d(155)-1116 Water	8702332
BOP-82i-1116 Water	8702333
BOP-83i-1116 Water	8702334
Trip Blank Water	8702335

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,

Kay Hower

Kay Hower

(510) 672-3979

Project Name: Portland 025116.116.412/TGA
LL Group #: 1734526

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8702331, 8702332

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26
2-hexanone	-26

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21

Sample #s: 8702333, 8702334, 8702335

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26
2-hexanone	-26

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Batch #: H163272AA (Sample number(s): 8702331-8702335)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 2-Hexanone

Sample Description: BOP-07d(148)-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702331
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 12:50 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

7D148

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**36**		5.0	1
11996	**Benzene**	71-43-2	**0.3**		0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**1.0**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.9**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.3**		0.2	1
11996	**Toluene**	108-88-3	**0.3**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**11**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.1**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
trichlorofluoromethane	23
2-butanone	-22%

Sample Description: BOP-07d(148)-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702331
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 12:50 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

7D148

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	4-methyl-2-pentanone	-26			
	2-hexanone	-26			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 16:24	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 16:24	Kevin A Sposito	1

Sample Description: BOP-07d(155)-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702332
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 12:55 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

7D155

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**32**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.7**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**5.1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	**Vinyl Chloride**	75-01-4	**1.1**		0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26

Sample Description: BOP-07d(155)-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702332
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 12:55 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

7D155

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-hexanone		-26		

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. Therefore the result for the following analyte(s) is estimated.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 16:45	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 16:45	Kevin A Sposito	1

Sample Description: BOP-82i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702333
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 14:50 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

BP82I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**27**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.7**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**8.7**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%

Sample Description: BOP-82i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702333
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 14:50 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

BP82I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	4-methyl-2-pentanone	-26			
	2-hexanone	-26			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 17:05	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 17:05	Kevin A Sposito	1

Sample Description: BOP-83i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702334
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 14:35 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

BP83I

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**19**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	**1,1-Dichloroethene**	75-35-4	**0.6**		0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**4.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**10**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%

Sample Description: BOP-83i-1116 Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702334
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016 14:35 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

BP83I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	4-methyl-2-pentanone	-26			
	2-hexanone	-26			

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 17:25	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 17:25	Kevin A Sposito	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702335
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016

The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

BOPT1

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.412

LL Sample # WW 8702335
LL Group # 1734526
Account # 13419

Project Name: Portland 025116.116.412/TGA

Collected: 11/16/2016

The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:43

BOPT1

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-hexanone		-26		

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 17:46	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 17:46	Kevin A Sposito	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/25/2016 08:43

Group Number: 1734526

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: H163272AA	Sample number(s): 8702331-8702335		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

*- 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: 11/25/2016 08:43

Group Number: 1734526

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: H163272AA	Sample number(s): 8702331-8702335								
Acetone	37.5	31.05	37.5	29.8	83	79	65-130	4	30
Benzene	5.00	5.21	5.00	5.39	104	108	80-120	3	30
Bromodichloromethane	5.00	5.30	5.00	5.34	106	107	80-120	1	30
Bromoform	5.00	4.61	5.00	4.97	92	99	62-128	7	30
Bromomethane	5.00	6.03	5.00	6.06	121	121	62-131	0	30
2-Butanone	37.5	28.03	37.5	29.1	75	78	66-135	4	30
Carbon Disulfide	5.00	4.36	5.00	4.57	87	91	65-120	5	30
Carbon Tetrachloride	5.00	4.85	5.00	5.12	97	102	79-124	6	30
Chlorobenzene	5.00	5.03	5.00	5.27	101	105	80-120	5	30
Chloroethane	5.00	5.82	5.00	5.91	116	118	63-125	2	30
Chloroform	5.00	5.02	5.00	5.12	100	102	80-120	2	30
Chloromethane	5.00	5.19	5.00	5.15	104	103	55-126	1	30
Dibromochloromethane	5.00	4.88	5.00	5.19	98	104	78-127	6	30
1,1-Dichloroethane	5.00	5.02	5.00	5.07	100	101	75-120	1	30
1,2-Dichloroethane	5.00	4.91	5.00	4.95	98	99	72-127	1	30
1,1-Dichloroethene	5.00	5.66	5.00	5.13	113	103	76-120	10	30
cis-1,2-Dichloroethene	5.00	5.11	5.00	5.27	102	105	80-120	3	30
trans-1,2-Dichloroethene	5.00	5.12	5.00	5.34	102	107	80-120	4	30
1,2-Dichloropropane	5.00	5.33	5.00	5.40	107	108	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.37	5.00	5.33	107	107	80-124	1	30
trans-1,3-Dichloropropene	5.00	5.21	5.00	5.55	104	111	77-121	6	30
Ethylbenzene	5.00	5.03	5.00	5.33	101	107	80-120	6	30
2-Hexanone	25	17.38	25	18.12	70*	72*	73-128	4	30
4-Methyl-2-pentanone	25	22.12	25	18.28	88	73	71-129	19	30
Methylene Chloride	5.00	5.05	5.00	5.21	101	104	80-120	3	30
Styrene	5.00	5.32	5.00	5.60	106	112	80-120	5	30
1,1,2,2-Tetrachloroethane	5.00	5.32	5.00	5.50	106	110	75-123	3	30
Tetrachloroethene	5.00	4.71	5.00	5.10	94	102	80-120	8	30
Toluene	5.00	5.02	5.00	5.30	100	106	80-120	5	30
112Trichloro122Trifluoroethane	5.00	5.49	5.00	4.87	110	97	75-120	12	30
1,1,1-Trichloroethane	5.00	4.64	5.00	4.90	93	98	79-120	5	30
1,1,2-Trichloroethane	5.00	5.16	5.00	5.43	103	109	80-120	5	30
Trichloroethene	5.00	5.20	5.00	5.39	104	108	80-120	4	30
Trichlorofluoromethane	5.00	5.66	5.00	5.47	113	109	71-131	3	30
Vinyl Acetate	12.5	12.77	12.5	12.33	102	99	63-122	3	30
Vinyl Chloride	5.00	5.54	5.00	5.80	111	116	62-128	5	30
m+p-Xylene	10	10.02	10	10.93	100	109	80-120	9	30
o-Xylene	5.00	5.03	5.00	5.28	101	106	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
Group Number: 1734526
Reported: 11/25/2016 08:43

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 Boeing 38
Batch number: H163272AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8702331	97	102	102	98
8702332	99	104	97	95
8702333	97	100	101	99
8702334	104	101	97	97
8702335	99	104	100	96
Blank	98	103	100	95
LCS	100	104	97	101
LCSD	97	99	101	100
Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 173526 Sample # 810233 1 - 35

Please print. Instructions on reverse side correspond.

1 Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: D251 16.116.412
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify): _____
Sampler: EMW # of Coolers: 1

2 Sample Identification / 3 Matrix / 4 Analyses Requested / 5 Remarks/Comments

Sample Identification	Collected Date	Collected Time	Matrix	No. of Containers	VOC (38 List)
BOP-07d(148)-1116	11/16/16	1250	H2O	3	X
BOP-07d(155)-1116	11/16/16	1255	H2O	3	X
BOP-82i-1116	11/16/16	1450	H2O	3	X
BOP-83i-1116	11/16/16	1435	H2O	3	X
Trip Blanks	—	—	H2O	2	X

Page 17 of 19

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

7

	Date/Time		Date/Time
Relinquished by: [signature]	11/16/16 1600	Received by: [signature]	
Relinquished by: [signature]		Received by:	
Relinquished by: [signature]		Received by: [signature]	11-17-16 930

Relinquished by commercial carrier (circle): UPS FedEx Other: _____

Temperature upon Receipt: 1.5 °C

Custody Seals Intact?: (Yes) No

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 168493
Group Number(s): 1734526

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	11/17/2016 9:30
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	HCl
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 17:26 on 11/17/2016

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	1.5	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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 ≥ 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.

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.

1Q16 TSA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Anne Halvorsen

DATE: March 9, 2016

RE: **Boeing Portland (TSA)**
First Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 10 groundwater samples and 1 trip blank collected during the first quarter 2016 TSA water quality sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental LLC (LLI), located in Lancaster, Pennsylvania. This data quality evaluation covers LLI data package 1628887. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs] U.S. Environmental Protection Agency [EPA] Method SW8260C).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008). The verification and validation check for each laboratory data package included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. All data was found to be acceptable with no qualifications.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition. All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperature was recorded. The cooler was received with a temperature within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times. No qualification of the data was necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for VOCs analysis. No contamination was detected in the method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

One trip blank was submitted to the laboratory for VOC analysis with the sample batch. No contamination was detected in the trip blank. No qualification of the data was necessary. No field equipment blanks were submitted for analysis with this sample batch.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the VOCs analysis. Recovery values for the surrogate spikes were within the current laboratory-specified control limits. No qualification of the data was necessary.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

No matrix spike or laboratory duplicate samples were analyzed with this data package.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for VOCs analysis. Recoveries and relative percent differences (RPDs) for the laboratory control samples and associated duplicates were within the current laboratory-specified control limits. No qualification of the data was necessary.

Blind Field Duplicate Results

One pair of blind field duplicate samples was submitted for VOC analysis: BOP-Z-0216/99BOP-13ds-0216.

A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate water samples, except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for the duplicate sample pair submitted for analysis were within the project-specified control limits. No qualification of the data was necessary.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where high concentrations required dilution of the sample extracts.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for this sample batch. Continuing calibration verification (CCV) recovery results were within laboratory-specified control limits.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates and blind field duplicates. Data accuracy was evaluated through laboratory control samples and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



Kristi Schultz
Assistant Scientist



Anne Halvorsen
Senior Project Scientist

ASH/kes
[P:\025\116\FILERM\T\TSA\DV TSA\2015\4Q15\TSA 4Q15 TM.DOCX]

References

EPA. 2008. *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.* USEPA-540-R-08-01. U.S. Environmental Protection Agency. Office of Superfund Remediation and Technology Innovation. Washington, D.C. June.

EPA. 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA-540/R-99-008. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Washington, D.C. October.

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

February 15, 2016

Project: Portland 025116.616.640/TSA

Submittal Date: 02/04/2016
Group Number: 1628887
PO Number: 025116.616.640
State of Sample Origin: OR

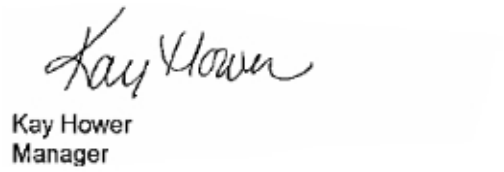
Client Sample Description	Lancaster Labs (LL) #
EW-3-0216 Water	8230545
EW-13-0216 Water	8230546
BOP-13ds-0216 Water	8230547
BOP-31ds-0216 Water	8230548
BOP-31dg-0216 Water	8230549
BOP-61ds-0216 Water	8230550
BOP-61dg-0216 Water	8230551
BOP-65ds-0216 Water	8230552
BOP-66ds-0216 Water	8230553
BOP-Z-0216 Water	8230554
Trip Blank Water	8230555

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	Landau Associates	Attn: Dani Jorgensen
ELECTRONIC COPY TO	Landau	Attn: Brett Borgeson
ELECTRONIC COPY TO	Landau Associates	Attn: Terry McGourty
ELECTRONIC COPY TO	Landau	Attn: Chris Kimmel
ELECTRONIC COPY TO	Landau Associates	Attn: Anne Halvorsen

Respectfully Submitted,



Kay Hower
Manager

(510) 672-3979

Project Name: Portland 025116.616.640/TSA
LL Group #: 1628887

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:

No additional comments are necessary.

Sample Description: EW-3-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230545
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/03/2016 08:20 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-EW3-

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**160**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 01:14	Sara E Johnson	1

Sample Description: EW-3-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230545
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/03/2016 08:20 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-EW3-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 01:14	Sara E Johnson	1

Sample Description: EW-13-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230546
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 15:55 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-EW13

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.8**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 01:35	Sara E Johnson	1

Sample Description: **EW-13-0216 Water**
Boeing Portland 0025116.616.640

LL Sample # WW 8230546
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 15:55 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-EW13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 01:35	Sara E Johnson	1

Sample Description: BOP-13ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230547
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 13:45 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-13DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160392AA	02/09/2016 01:55	Sara E Johnson	1

Sample Description: BOP-13ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230547
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 13:45 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-13DS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160392AA	02/09/2016 01:55	Sara E Johnson	1

Sample Description: BOP-31ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230548
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 14:55 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-31DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 12:05	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 12:05	Kerri E Legerlotz	1

Sample Description: BOP-31dg-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230549
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 15:00 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-31DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**25**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.4**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**4.4**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 12:25	Kerri E Legerlotz	1

Sample Description: BOP-31dg-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230549
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 15:00 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-31DG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 12:25	Kerri E Legerlotz	1

Sample Description: BOP-61ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230550
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 14:20 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-61DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.3**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**7.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 12:45	Kerri E Legerlotz	1

Sample Description: BOP-61ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230550
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 14:20 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-61DS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 12:45	Kerri E Legerlotz	1

Sample Description: BOP-61dg-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230551
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 14:30 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-61DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**26**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 13:06	Kerri E Legerlotz	1

Sample Description: BOP-61dg-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230551
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 14:30 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-61DG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 13:06	Kerri E Legerlotz	1

Sample Description: BOP-65ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230552
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 16:50 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-65DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.2**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 13:26	Kerri E Legerlotz	1

Sample Description: BOP-65ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230552
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 16:50 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-65DS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 13:26	Kerri E Legerlotz	1

Sample Description: BOP-66ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230553
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 15:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-66DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 13:46	Kerri E Legerlotz	1

Sample Description: BOP-66ds-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230553
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 15:40 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

-66DS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 13:46	Kerri E Legerlotz	1

Sample Description: BOP-Z-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230554
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 08:00 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

BOP-Z

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 14:06	Kerri E Legerlotz	1

Sample Description: BOP-Z-0216 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230554
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 02/02/2016 08:00 by EMW The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

BOP-Z

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 14:06	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.616.640

LL Sample # WW 8230555
LL Group # 1628887
Account # 13419

Project Name: Portland 025116.616.640/TSA

Collected: 01/15/2016

The Boeing Company

Submitted: 02/04/2016 09:40
Reported: 02/15/2016 11:12

BOP-T

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H160401AA	02/09/2016 11:45	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H160401AA	02/09/2016 11:45	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 02/15/2016 11:12

Group Number: 1628887

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: H160392AA	Sample number(s): 8230545-8230547		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H160401AA	Sample number(s): 8230548-8230555		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 02/15/2016 11:12

Group Number: 1628887

Analysis Name	Result ug/l		LOQ ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

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: H160392AA	Sample number(s): 8230545-8230547								
Acetone	37.5	35.48	37.5	36.87	95	98	55-136	4	30
Benzene	5.00	5.00	5.00	4.93	100	99	80-120	1	30
Bromodichloromethane	5.00	5.01	5.00	4.92	100	98	80-120	2	30
Bromoform	5.00	4.69	5.00	4.75	94	95	64-134	1	30
Bromomethane	5.00	5.12	5.00	5.00	102	100	71-126	2	30
2-Butanone	37.5	38.33	37.5	38.69	102	103	66-135	1	30
Carbon Disulfide	5.00	4.83	5.00	4.82	97	96	70-128	0	30
Carbon Tetrachloride	5.00	5.24	5.00	5.19	105	104	79-129	1	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: 02/15/2016 11:12

Group Number: 1628887

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
Chlorobenzene	5.00	4.83	5.00	4.88	97	98	80-120	1	30
Chloroethane	5.00	4.85	5.00	4.76	97	95	71-122	2	30
Chloroform	5.00	4.96	5.00	4.98	99	100	80-120	0	30
Chloromethane	5.00	4.60	5.00	4.49	92	90	63-121	3	30
Dibromochloromethane	5.00	4.80	5.00	4.84	96	97	80-126	1	30
1,1-Dichloroethane	5.00	4.61	5.00	4.62	92	92	80-120	0	30
1,2-Dichloroethane	5.00	4.72	5.00	4.66	94	93	80-125	1	30
1,1-Dichloroethene	5.00	5.09	5.00	5.00	102	100	80-120	2	30
cis-1,2-Dichloroethene	5.00	5.12	5.00	5.05	102	101	80-120	2	30
trans-1,2-Dichloroethene	5.00	5.25	5.00	5.13	105	103	80-120	2	30
1,2-Dichloropropane	5.00	5.01	5.00	4.92	100	98	80-120	2	30
cis-1,3-Dichloropropene	5.00	4.86	5.00	4.74	97	95	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.59	5.00	4.64	92	93	76-132	1	30
Ethylbenzene	5.00	4.76	5.00	4.81	95	96	80-120	1	30
2-Hexanone	25	25.88	25	26.21	104	105	71-138	1	30
4-Methyl-2-pentanone	25	25.19	25	25.28	101	101	73-135	0	30
Methylene Chloride	5.00	5.04	5.00	4.92	101	98	80-120	2	30
Styrene	5.00	4.97	5.00	4.96	99	99	80-122	0	30
1,1,2,2-Tetrachloroethane	5.00	4.53	5.00	4.55	91	91	80-120	0	30
Tetrachloroethene	5.00	4.71	5.00	4.73	94	95	80-120	0	30
Toluene	5.00	4.72	5.00	4.74	94	95	80-120	0	30
112Trichloro122Trifluoroethane	5.00	5.32	5.00	5.21	106	104	75-120	2	30
1,1,1-Trichloroethane	5.00	5.05	5.00	5.04	101	101	80-120	0	30
1,1,2-Trichloroethane	5.00	4.73	5.00	4.75	95	95	80-120	0	30
Trichloroethene	5.00	5.27	5.00	5.17	105	103	80-120	2	30
Trichlorofluoromethane	5.00	5.40	5.00	5.25	108	105	69-133	3	30
Vinyl Acetate	12.5	10.97	12.5	10.69	88	86	10-183	3	30
Vinyl Chloride	5.00	5.03	5.00	4.85	101	97	71-123	4	30
m+p-Xylene	10	9.74	10	9.79	97	98	80-120	1	30
o-Xylene	5.00	4.85	5.00	4.88	97	98	80-120	1	30
Batch number: H160401AA	Sample number(s): 8230548-8230555								
Acetone	37.5	34.23	37.5	34.56	91	92	55-136	1	30
Benzene	5.00	5.26	5.00	5.03	105	101	80-120	5	30
Bromodichloromethane	5.00	5.38	5.00	5.18	108	104	80-120	4	30
Bromoform	5.00	5.33	5.00	4.92	107	98	64-134	8	30
Bromomethane	5.00	5.40	5.00	5.10	108	102	71-126	6	30
2-Butanone	37.5	33.49	37.5	36.27	89	97	66-135	8	30
Carbon Disulfide	5.00	5.05	5.00	4.85	101	97	70-128	4	30
Carbon Tetrachloride	5.00	5.82	5.00	5.41	116	108	79-129	7	30
Chlorobenzene	5.00	5.19	5.00	4.93	104	99	80-120	5	30
Chloroethane	5.00	5.21	5.00	5.07	104	101	71-122	3	30
Chloroform	5.00	5.29	5.00	5.10	106	102	80-120	4	30
Chloromethane	5.00	4.81	5.00	4.55	96	91	63-121	6	30
Dibromochloromethane	5.00	5.27	5.00	5.09	105	102	80-126	4	30
1,1-Dichloroethane	5.00	5.05	5.00	4.83	101	97	80-120	5	30
1,2-Dichloroethane	5.00	5.11	5.00	4.94	102	99	80-125	3	30
1,1-Dichloroethene	5.00	5.34	5.00	5.12	107	102	80-120	4	30
cis-1,2-Dichloroethene	5.00	5.29	5.00	5.09	106	102	80-120	4	30
trans-1,2-Dichloroethene	5.00	5.43	5.00	5.23	109	105	80-120	4	30
1,2-Dichloropropane	5.00	5.32	5.00	5.16	106	103	80-120	3	30
cis-1,3-Dichloropropene	5.00	5.03	5.00	4.81	101	96	80-124	4	30
trans-1,3-Dichloropropene	5.00	5.01	5.00	4.86	100	97	76-132	3	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: 02/15/2016 11:12

Group Number: 1628887

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
Ethylbenzene	5.00	5.17	5.00	4.95	103	99	80-120	4	30
2-Hexanone	25	22.02	25	24.71	88	99	71-138	12	30
4-Methyl-2-pentanone	25	22.57	25	23.69	90	95	73-135	5	30
Methylene Chloride	5.00	5.12	5.00	4.96	102	99	80-120	3	30
Styrene	5.00	5.30	5.00	5.10	106	102	80-122	4	30
1,1,2,2-Tetrachloroethane	5.00	4.98	5.00	4.73	100	95	80-120	5	30
Tetrachloroethene	5.00	5.15	5.00	4.88	103	98	80-120	5	30
Toluene	5.00	5.06	5.00	4.88	101	98	80-120	4	30
112Trichloro122Trifluoroethane	5.00	5.54	5.00	5.44	111	109	75-120	2	30
1,1,1-Trichloroethane	5.00	5.54	5.00	5.28	111	106	80-120	5	30
1,1,2-Trichloroethane	5.00	4.96	5.00	4.91	99	98	80-120	1	30
Trichloroethene	5.00	5.54	5.00	5.28	111	106	80-120	5	30
Trichlorofluoromethane	5.00	5.56	5.00	5.30	111	106	69-133	5	30
Vinyl Acetate	12.5	12.9	12.5	12.93	103	103	10-183	0	30
Vinyl Chloride	5.00	5.12	5.00	4.84	102	97	71-123	6	30
m+p-Xylene	10	10.58	10	10.15	106	101	80-120	4	30
o-Xylene	5.00	5.19	5.00	4.99	104	100	80-120	4	30

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 Boeing 38
Batch number: H160392AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8230545	101	100	99	97
8230546	108	107	94	99
8230547	100	99	100	96
Blank	106	104	94	99
LCS	106	101	95	102
LCSD	105	99	96	101
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H160401AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8230548	101	101	100	97
8230549	101	98	100	97
8230550	101	100	100	95
8230551	106	103	95	99
8230552	107	105	95	99
8230553	106	102	96	98
8230554	105	99	97	97
8230555	102	101	99	97
Blank	104	101	97	98
LCS	102	102	98	102
LCSD	102	97	98	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 Group Number: 1628887
Reported: 02/15/2016 11:12

Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1628887 Sample # 8230545-55

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.616.640
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW/SMM # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 List)	(5) Remarks/Comments
EW-3-0216	2/3/16	0820	H2O	3	X	
EW-13-0216	2/2/16	1555		3	X	
BOP-13ds-0216		1345		3	X	
BOP-31ds-0216		1455		3	X	
BOP-31dg-0216		1500		3	X	
BOP-61ds-0216		1420		3	X	
BOP-61dg-0216		1430		3	X	
BOP-65ds-0216		1650		3	X	
BOP-66ds-0216		1540		3	X	
BOP-2-0216		0800		3	X	
Trip Blanks	1/15/16	—		2	X	

(6) Turnaround Time Requested (please circle)

(Standard)	5 day	4 day
72 hour	48 hour	24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
E Winkel	2/3/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 2/4/16 940

Relinquished by commercial carrier (circle): UPS FedEx (3) 2/4/16 Other:

Temperature upon Receipt: 7 °C

Custody Seals Intact?: (Yes) No

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Sample Administration Receipt Documentation Log

Doc Log ID: 135343

Group Number(s): 1628887

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	02/04/2016 9:40
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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 Wesley Miller (2308) at 11:11 on 02/04/2016

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	DT131	0.7	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T 717-656-2300
F 717-656-2681
www.LancasterLabs.com

1628887



LARRY STARKEY
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EUROFINS LANCASTER LABORATORIE
940 HENSLEY
RICHMOND CA 94801

40 LBS

RS DWT: 25,14,14

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(717) 656-2300
EUROFINS LANCASTER LABORATORIES.
2425 NEW HOLLAND PIKE
LANCASTER PA 17601-5946

PA 175 9-37

UPS NEXT DAY AIR 1 S
TRACKING #: 1Z RV3 069 Y0 4475 7042

BILLING: P/P
DESC: SAMPLING
RETURN SERVICE

REF 1:DEPT 40

WS 17.0.31 LD620D 63.0A 04/2015

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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 ≥ 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.

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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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2Q16 TSA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Danille Jorgensen

DATE: July 6, 2016

RE: **Boeing Portland (TSA)**
Second Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 2 groundwater samples and 1 trip blank collected during the second quarter 2016 TSA water quality sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental LLC (LLI), located in Lancaster, Pennsylvania. This data quality evaluation covers LLI data package 1658053. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs] U.S. Environmental Protection Agency [EPA] Method SW8260C).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008). Landau Associates performed an EPA-equivalent Level II verification and validation check on each laboratory data package, which included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. All data was found to be acceptable with no qualifications.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition. All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperature was recorded. The cooler was received with a temperature within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times. No qualification of the data was necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for VOCs analysis. Target analytes were not detected at concentrations greater than the reporting limits in the associated method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

One trip blank was submitted to the laboratory for VOC analysis with the sample batch. Target analytes were not detected at concentrations greater than the reporting limits in the associated trip blank. No qualification of the data was necessary. No field equipment blanks were submitted for analysis with this sample batch.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the VOCs analysis. Recovery values for the surrogate spikes were within the current laboratory-specified control limits. No qualification of the data was necessary.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

No matrix spike or laboratory duplicate samples were analyzed with this data package.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for VOCs analysis. Recoveries and relative percent differences

(RPDs) for the laboratory control samples and associated duplicates were within the current laboratory-specified control limits. No qualification of the data was necessary.

Blind Field Duplicate Results

No blind field duplicates were submitted for analysis with this sample batch.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where high concentrations required dilution of the sample extracts.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for this sample batch. Based on the laboratory's case narrative, continuing calibration verification (CCV) recovery results were within laboratory-specified control limits.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates and blind field duplicates. Data accuracy was evaluated through laboratory control samples and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



Kristi Schultz
Data Specialist



Danille Jorgensen
Environmental Data Manager

DRJ/kes
[P:\025\116\FILERM\T\TSA\DV TSA\2016\2Q16\TSA 2Q16 TM.DOCX]

References

EPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. edited by Office of Emergency and Remedial Response. Washington, DC: US Environmental Protection Agency.

EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

eurofins | Lancaster Laboratories Environmental

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: May 16, 2016

Project: Boeing of Portland/025116.616.640

Submittal Date: 05/06/2016
Group Number: 1658053
PO Number: 0025116.616.640
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-31ds-0516 Water	8368648
BOP-13ds-0516 Water	8368649
Trip Blank Water	8368650

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,

Kay Hower

Kay Hower
Manager

(510) 672-3979

Project Name: Boeing of Portland/025116.616.640
LL Group #: 1658053

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:

No additional comments are necessary.

Sample Description: BOP-31ds-0516 Water
Boeing Portland 0025116.616.640/TSA

LL Sample # WW 8368648
LL Group # 1658053
Account # 13419

Project Name: Boeing of Portland/025116.616.640

Collected: 05/05/2016 12:40 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 05/16/2016 11:53

BO31D

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 13:09	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 13:09	Kerri E Legerlotz	1

Sample Description: BOP-13ds-0516 Water
Boeing Portland 0025116.616.640/TSA

LL Sample # WW 8368649
LL Group # 1658053
Account # 13419

Project Name: Boeing of Portland/025116.616.640

Collected: 05/05/2016 12:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 05/16/2016 11:53

BO13D

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.0**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 13:29	Kerri E Legerlotz	1

Sample Description: BOP-13ds-0516 Water
Boeing Portland 0025116.616.640/TSA

LL Sample # WW 8368649
LL Group # 1658053
Account # 13419

Project Name: Boeing of Portland/025116.616.640

Collected: 05/05/2016 12:00 by EMW The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 05/16/2016 11:53

BO13D

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 13:29	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.616.640/TSA

LL Sample # WW 8368650
LL Group # 1658053
Account # 13419

Project Name: Boeing of Portland/025116.616.640

Collected: 04/20/2016

The Boeing Company

Submitted: 05/06/2016 10:10
Reported: 05/16/2016 11:53

TSATB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H161341AA	05/13/2016 11:28	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H161341AA	05/13/2016 11:28	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 05/16/2016 11:53

Group Number: 1658053

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 ug/l		LOQ ug/l
Batch number: H161341AA	Sample number(s): 8368648-8368650		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

*- 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: 05/16/2016 11:53

Group Number: 1658053

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: H161341AA	Sample number(s): 8368648-8368650								
Acetone	37.5	35.61	37.5	35.38	95	94	65-124	1	30
Benzene	5.00	4.97	5.00	4.82	99	96	80-120	3	30
Bromodichloromethane	5.00	5.02	5.00	4.81	100	96	80-120	4	30
Bromoform	5.00	4.85	5.00	4.91	97	98	62-128	1	30
Bromomethane	5.00	5.17	5.00	4.88	103	98	71-126	6	30
2-Butanone	37.5	38.29	37.5	36.33	102	97	66-135	5	30
Carbon Disulfide	5.00	4.57	5.00	4.40	91	88	65-120	4	30
Carbon Tetrachloride	5.00	5.15	5.00	4.95	103	99	65-134	4	30
Chlorobenzene	5.00	4.91	5.00	4.89	98	98	80-120	0	30
Chloroethane	5.00	4.70	5.00	4.57	94	91	71-122	3	30
Chloroform	5.00	4.98	5.00	4.81	100	96	80-120	4	30
Chloromethane	5.00	4.30	5.00	4.10	86	82	63-121	5	30
Dibromochloromethane	5.00	4.85	5.00	4.83	97	97	68-131	1	30
1,1-Dichloroethane	5.00	4.85	5.00	4.62	97	92	75-120	5	30
1,2-Dichloroethane	5.00	4.75	5.00	4.64	95	93	72-127	2	30
1,1-Dichloroethene	5.00	5.19	5.00	5.05	104	101	70-120	3	30
cis-1,2-Dichloroethene	5.00	5.28	5.00	5.01	106	100	80-120	5	30
trans-1,2-Dichloroethene	5.00	5.27	5.00	5.05	105	101	80-120	4	30
1,2-Dichloropropane	5.00	4.97	5.00	4.77	99	95	80-120	4	30
cis-1,3-Dichloropropene	5.00	4.86	5.00	4.55	97	91	80-124	7	30
trans-1,3-Dichloropropene	5.00	4.66	5.00	4.49	93	90	77-121	4	30
Ethylbenzene	5.00	4.84	5.00	4.77	97	95	80-120	2	30
2-Hexanone	25	25.35	25	23.98	101	96	73-128	6	30
4-Methyl-2-pentanone	25	26.24	25	24.33	105	97	71-129	8	30
Methylene Chloride	5.00	5.00	5.00	4.87	100	97	80-120	2	30
Styrene	5.00	4.95	5.00	4.90	99	98	80-122	1	30
1,1,2,2-Tetrachloroethane	5.00	4.31	5.00	4.54	86	91	80-120	5	30
Tetrachloroethene	5.00	5.01	5.00	4.98	100	100	80-120	1	30
Toluene	5.00	4.86	5.00	4.77	97	95	80-120	2	30
112Trichloro122Trifluoroethane	5.00	5.11	5.00	4.98	102	100	75-120	3	30
1,1,1-Trichloroethane	5.00	4.95	5.00	4.77	99	95	70-124	4	30
1,1,2-Trichloroethane	5.00	4.90	5.00	4.79	98	96	80-120	2	30
Trichloroethene	5.00	5.31	5.00	5.08	106	102	80-120	4	30
Trichlorofluoromethane	5.00	4.88	5.00	4.64	98	93	64-133	5	30
Vinyl Acetate	12.5	12.77	12.5	12.88	102	103	40-185	1	30
Vinyl Chloride	5.00	4.67	5.00	4.57	93	91	62-128	2	30
m+p-Xylene	10	9.75	10	9.79	97	98	80-120	0	30
o-Xylene	5.00	4.88	5.00	4.81	98	96	80-120	1	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
Group Number: 1658053
Reported: 05/16/2016 11:53

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 Boeing 38
Batch number: H161341AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8368648	97	99	103	93
8368649	101	98	98	94
8368650	99	99	101	92
Blank	100	97	99	92
LCS	105	104	96	97
LCSD	102	102	99	96
Limits:	77-114	74-113	77-110	78-110

*- 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

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Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1658053 Sample # 8368648-50

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 02511 6.616.6140
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify):
Sampler: EMW # of Coolers: 1

(4) Analyses Requested

VOCs (BB List)

(5) Remarks/Comments

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	VOCs (BB List)
BoP-31ds-0516	5/5/16	1240	H2O	3	X
BoP-13ds-0516	5/5/16	1200	H2O	3	X
Trip Blanks	4/20/16	—	H2O	2	X

(6) Turnaround Time Requested (please circle)

Standard	5 day	4 day
~~72 hour~~	48 hour	24 hour

Date needed: _____

				(7)
Relinquished by: EMWankel	Date/Time 5/5/16 1620	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time 5/6/16 1010	

Relinquished by commercial carrier (circle): UPS FedEx Other: _____

Temperature upon Receipt: 0-6 °C

Custody Seals Intact?: (Yes) ~~No~~

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.
Issued by Dept. 40 Management
7063.02

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 145644

Group Number(s): 1658053

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	05/06/2016 10:10
Number of Packages:	2	Number of Projects:	1
State/Province of Origin:	OR		

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:	HCl
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Wesley Miller (2308) at 14:14 on 05/06/2016

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	0.7	DT	Wet	Y	Bagged	N
2	DT121	0.6	DT	Wet	Y	Bagged	N

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Lancaster, PA 17605-2425
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F 717-656-2681
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RRD R 0515

GH 1658053

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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 ≥ 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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3Q16 TSA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Danille Jorgensen

DATE: September 13, 2016

RE: **Boeing Portland (TSA)**
Third Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 21 groundwater samples and 2 trip blanks collected during the third quarter 2016 TSA water quality sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental LLC (LLI), located in Lancaster, Pennsylvania. This data quality evaluation covers LLI data packages 1693903 and 1691408. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs]; US Environmental Protection Agency [EPA] Method SW8260C).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008). Landau Associates performed an EPA-equivalent Level II verification and validation check on each laboratory data package, which included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. Data validation qualifiers are summarized in Table 1.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition. All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperatures were recorded. The coolers were received with temperatures within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times. No qualification of the data was necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for VOCs analysis. Target analytes were not detected at concentrations greater than the reporting limits in the associated method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

One trip blank was submitted to the laboratory for VOC analysis with each sample batch. Target analytes were not detected at concentrations greater than the reporting limits in the associated trip blanks. No qualification of the data was necessary. No field equipment blanks were submitted for analysis with this sample batch.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the VOCs analysis. Recovery values for the surrogate spikes were within the current laboratory-specified control limits. No qualification of the data was necessary.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

One MS/MSD sample was analyzed with the VOC samples in data package 1693903. The recovery values for each required spiking compound and/or the relative percent differences (RPDs) between the MS/MSD results were within the current project-specified and/or laboratory-specified control limits for all project samples with the following exceptions:

- The MS/MSD recoveries for 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane associated with sample BOP-20ds-0816 in data package 1693903 exceeded the laboratory-

specified control limits. The affected compounds were not detected in the associated sample; therefore, no qualification of the data was necessary.

- The MS/MSD RPD for 2-butanone associated with sample BOP-20ds-0816 in data package 1693903 exceeded the laboratory-specified control limit. The affected compound was not detected in the associated sample; therefore, no qualification of the data was necessary.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for VOCs analysis. Recoveries and RPDs for the laboratory control samples and associated duplicates were within the current laboratory-specified control limits, with the following exceptions:

- The LCS recoveries for 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane in data package 1693903 exceeded the laboratory-specified control limits. The affected compounds were not detected in the associated samples; therefore, no qualification of the data was necessary.
- The LCS/LCSD recoveries for 2-hexanone and 4-methyl-2-pentanone in data package 1693903 were below the laboratory-specified control limits. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.

Blind Field Duplicate Results

As specified in the QAPP, blind field duplicate samples were collected at a rate of one blind field duplicate sample per 20 samples, but not less than one blind field duplicate per sampling round. Two pairs of blind field duplicate water samples (BOP-Y-0816/BOP-60dg-0815 and BOP-Z-0816/BOP-20ds-0816) were submitted for analysis with data package 1693903.

A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for the duplicate sample pairs submitted for analysis were within the project-specified control limits. No qualification of the data was necessary.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where high concentrations required dilution of the sample extracts.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for this sample batch. Based on the laboratory's case narratives, continuing calibration verification (CCV) recovery results were within laboratory-specified control limits, with the following exceptions:

- The CCV recoveries were high for several VOC compounds in data package 1693903. The affected compounds were not detected in the associated samples; therefore, no qualification of the data was necessary.
- The CCV recoveries were low for several VOC compounds in data package 1693903. Associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The CCV recovery was high for Freon 113 in data package 1691408. The affected compound was not detected in the associated samples; therefore, no qualification of the data was necessary.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates, matrix spike duplicates, and blind field duplicates. Data accuracy was evaluated through laboratory control samples, matrix spike samples, and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



Kristi Schultz
Data Specialist



Danille Jorgensen
Environmental Data Manager

DRJ/kes
[\\EDMDATA01\PROJECTS\025\116\FILERM\T\TSA\DATA\DV TSA\2016\3Q16\TSA 3Q16 TM.DOCX]

References

EPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. edited by Office of Emergency and Remedial Response. Washington, DC: US Environmental Protection Agency.

EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

Table 1
Summary of Data Qualifiers
Boeing Portland TSA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1693903	2-Butanone	5.0 U	UJ	BOP-20dg-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-20dg-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-20dg-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-20ds-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-20ds-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-20ds-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-21ds-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-21ds-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-21ds-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-60dg-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-60dg-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-60dg-0816	Low continuing calibration recovery
1693903	Acetone	57	J	BOP-Y-0816	Low continuing calibration recovery
1693903	Chloromethane	0.5 U	UJ	BOP-Y-0816	Low continuing calibration recovery
1693903	Chloroethane	0.5 U	UJ	BOP-Y-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-Y-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-Y-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-Y-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-Z-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-Z-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-Z-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-22Rds-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-22Rds-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-22Rds-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-62ds-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-62ds-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-62ds-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-65ds-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-65ds-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-65ds-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	BOP-66ds-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-66ds-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-66ds-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	EW-3-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	EW-3-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	EW-3-0816	Low continuing calibration recovery
1693903	2-Butanone	5.0 U	UJ	EW-13-0816	Low continuing calibration recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	EW-13-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	EW-13-0816	Low continuing calibration recovery
1693903	2-Hexanone	5.0 U	UJ	BOP-Y-0816	Low LCS/LCSD recovery
1693903	4-Methyl-2-pentanone	5.0 U	UJ	BOP-Y-0816	Low LCS/LCSD recovery

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: August 16, 2016

Project: Portland/025116.616.640 TSA

Submittal Date: 08/05/2016
Group Number: 1691408
PO Number: 0025116.616.640
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-13ds-0816 Water	8510427
BOP-13dg-0816 Water	8510428
BOP-31dg-0816 Water	8510429
BOP-23dg-0816 Water	8510430
BOP-42ds-0816 Water	8510431
BOP-42dg-0816 Water	8510432
Trip Blank Water	8510433

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Portland/025116.616.640 TSA
LL Group #: 1691408

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8510427, 8510428, 8510429, 8510430

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: BOP-13ds-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510427
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 15:00 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B13DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: BOP-13ds-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510427
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 15:00 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B13DS

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 04:54	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 04:54	Matthew S Krause	1

Sample Description: BOP-13dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510428
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 14:25 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B13DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**93**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: BOP-13dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510428
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 14:25 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B13DG

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 05:14	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 05:14	Matthew S Krause	1

Sample Description: BOP-31dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510429
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 15:35 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B31DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**71**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.5**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**4.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: BOP-31dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510429
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 15:35 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B31DG

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 05:34	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 05:34	Matthew S Krause	1

Sample Description: BOP-23dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510430
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 15:50 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B23DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**48**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
freon 113	21

Sample Description: BOP-23dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510430
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 15:50 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B23DG

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162232AA	08/11/2016 05:55	Matthew S Krause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162232AA	08/11/2016 05:55	Matthew S Krause	1

Sample Description: BOP-42ds-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510431
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 13:50 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B42DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**58**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 13:06	Kerri E Legerlotz	1

Sample Description: BOP-42ds-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510431
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 13:50 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B42DS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 13:06	Kerri E Legerlotz	1

Sample Description: BOP-42dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510432
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 14:05 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B42DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**43**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.5**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	**Toluene**	108-88-3	**0.5**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.5**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 13:26	Kerri E Legerlotz	1

Sample Description: BOP-42dg-0816 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510432
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 08/04/2016 14:05 by EMW The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

B42DG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 13:26	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.616.640

LL Sample # WW 8510433
LL Group # 1691408
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 07/15/2016

The Boeing Company

Submitted: 08/05/2016 10:00
Reported: 08/16/2016 11:00

BP-TB

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162251AA	08/12/2016 12:25	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162251AA	08/12/2016 12:25	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 08/16/2016 11:00

Group Number: 1691408

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: H162232AA	Sample number(s): 8510427-8510430		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162251AA	Sample number(s): 8510431-8510433		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 08/16/2016 11:00

Group Number: 1691408

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

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: H162232AA	Sample number(s): 8510427-8510430								
Acetone	37.5	36.9	37.5	33.48	98	89	65-124	10	30
Benzene	5.00	5.26	5.00	5.14	105	103	80-120	2	30
Bromodichloromethane	5.00	5.20	5.00	5.15	104	103	80-120	1	30
Bromoform	5.00	4.84	5.00	4.95	97	99	62-128	2	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: 08/16/2016 11:00

Group Number: 1691408

LCS/LCSD (continued)

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
Bromomethane	5.00	4.96	5.00	4.96	99	99	71-126	0	30
2-Butanone	37.5	37.78	37.5	38.59	101	103	66-135	2	30
Carbon Disulfide	5.00	5.00	5.00	4.76	100	95	65-120	5	30
Carbon Tetrachloride	5.00	5.37	5.00	5.28	107	106	65-134	2	30
Chlorobenzene	5.00	5.02	5.00	5.16	100	103	80-120	3	30
Chloroethane	5.00	5.01	5.00	4.85	100	97	71-122	3	30
Chloroform	5.00	5.14	5.00	5.06	103	101	80-120	1	30
Chloromethane	5.00	5.29	5.00	5.08	106	102	63-121	4	30
Dibromochloromethane	5.00	4.93	5.00	5.03	99	101	68-131	2	30
1,1-Dichloroethane	5.00	5.53	5.00	5.40	111	108	75-120	2	30
1,2-Dichloroethane	5.00	5.23	5.00	5.19	105	104	72-127	1	30
1,1-Dichloroethene	5.00	5.50	5.00	5.40	110	108	70-120	2	30
cis-1,2-Dichloroethene	5.00	5.24	5.00	5.16	105	103	80-120	1	30
trans-1,2-Dichloroethene	5.00	5.43	5.00	5.41	109	108	80-120	0	30
1,2-Dichloropropane	5.00	5.38	5.00	5.32	108	106	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.12	5.00	4.97	102	99	80-124	3	30
trans-1,3-Dichloropropene	5.00	4.97	5.00	5.14	99	103	77-121	3	30
Ethylbenzene	5.00	4.99	5.00	5.15	100	103	80-120	3	30
2-Hexanone	25	24.52	25	25.69	98	103	73-128	5	30
4-Methyl-2-pentanone	25	25.35	25	26.91	101	108	71-129	6	30
Methylene Chloride	5.00	5.18	5.00	5.15	104	103	80-120	1	30
Styrene	5.00	5.00	5.00	5.22	100	104	80-122	4	30
1,1,2,2-Tetrachloroethane	5.00	4.78	5.00	5.09	96	102	80-120	6	30
Tetrachloroethene	5.00	5.00	5.00	5.11	100	102	80-120	2	30
Toluene	5.00	5.07	5.00	5.21	101	104	80-120	3	30
112Trichloro122Trifluoroethane	5.00	5.33	5.00	5.32	107	106	75-120	0	30
1,1,1-Trichloroethane	5.00	5.21	5.00	5.17	104	103	70-124	1	30
1,1,2-Trichloroethane	5.00	5.03	5.00	5.20	101	104	80-120	3	30
Trichloroethene	5.00	5.28	5.00	5.28	106	106	80-120	0	30
Trichlorofluoromethane	5.00	5.56	5.00	5.31	111	106	64-133	5	30
Vinyl Acetate	12.5	12.68	12.5	12.63	101	101	40-185	0	30
Vinyl Chloride	5.00	5.18	5.00	5.11	104	102	62-128	1	30
m+p-Xylene	10	10.12	10	10.36	101	104	80-120	2	30
o-Xylene	5.00	4.97	5.00	5.13	99	103	80-120	3	30
Batch number: H162251AA	Sample number(s): 8510431-8510433								
Acetone	37.5	33.55	37.5	33.25	89	89	65-124	1	30
Benzene	5.00	5.39	5.00	5.06	108	101	80-120	6	30
Bromodichloromethane	5.00	5.39	5.00	5.07	108	101	80-120	6	30
Bromoform	5.00	5.08	5.00	4.63	102	93	62-128	9	30
Bromomethane	5.00	4.98	5.00	4.68	100	94	71-126	6	30
2-Butanone	37.5	31.04	37.5	33.06	83	88	66-135	6	30
Carbon Disulfide	5.00	5.22	5.00	4.70	104	94	65-120	10	30
Carbon Tetrachloride	5.00	5.68	5.00	5.23	114	105	65-134	8	30
Chlorobenzene	5.00	5.18	5.00	4.80	104	96	80-120	8	30
Chloroethane	5.00	4.76	5.00	4.49	95	90	71-122	6	30
Chloroform	5.00	5.32	5.00	4.95	106	99	80-120	7	30
Chloromethane	5.00	4.91	5.00	4.50	98	90	63-121	9	30
Dibromochloromethane	5.00	5.23	5.00	4.77	105	95	68-131	9	30
1,1-Dichloroethane	5.00	5.60	5.00	5.17	112	103	75-120	8	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: 08/16/2016 11:00

Group Number: 1691408

LCS/LCSD (continued)

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
1,2-Dichloroethane	5.00	5.14	5.00	4.93	103	99	72-127	4	30
1,1-Dichloroethene	5.00	5.87	5.00	5.37	117	107	70-120	9	30
cis-1,2-Dichloroethene	5.00	5.50	5.00	5.13	110	103	80-120	7	30
trans-1,2-Dichloroethene	5.00	5.68	5.00	5.32	114	106	80-120	7	30
1,2-Dichloropropane	5.00	5.46	5.00	5.13	109	103	80-120	6	30
cis-1,3-Dichloropropene	5.00	5.24	5.00	4.85	105	97	80-124	8	30
trans-1,3-Dichloropropene	5.00	4.88	5.00	4.56	98	91	77-121	7	30
Ethylbenzene	5.00	5.16	5.00	4.70	103	94	80-120	9	30
2-Hexanone	25	20.11	25	21.75	80	87	73-128	8	30
4-Methyl-2-pentanone	25	21.25	25	21.85	85	87	71-129	3	30
Methylene Chloride	5.00	5.49	5.00	5.07	110	101	80-120	8	30
Styrene	5.00	5.13	5.00	4.79	103	96	80-122	7	30
1,1,2,2-Tetrachloroethane	5.00	4.90	5.00	4.58	98	92	80-120	7	30
Tetrachloroethene	5.00	5.21	5.00	4.78	104	96	80-120	8	30
Toluene	5.00	5.20	5.00	4.77	104	95	80-120	9	30
112Trichloro122Trifluoroethane	5.00	5.88	5.00	5.33	118	107	75-120	10	30
1,1,1-Trichloroethane	5.00	5.42	5.00	5.02	108	100	70-124	8	30
1,1,2-Trichloroethane	5.00	5.13	5.00	4.82	103	96	80-120	6	30
Trichloroethene	5.00	5.46	5.00	5.14	109	103	80-120	6	30
Trichlorofluoromethane	5.00	5.58	5.00	5.00	112	100	64-133	11	30
Vinyl Acetate	12.5	12.11	12.5	11.98	97	96	40-185	1	30
Vinyl Chloride	5.00	5.09	5.00	4.62	102	92	62-128	10	30
m+p-Xylene	10	10.45	10	9.56	104	96	80-120	9	30
o-Xylene	5.00	5.09	5.00	4.72	102	94	80-120	7	30

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 Boeing 38
Batch number: H162232AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8510427	100	100	100	100
8510428	100	99	101	100
8510429	100	104	100	103
8510430	99	99	102	100
Blank	100	98	100	98
LCS	104	104	98	100
LCSD	100	100	101	101
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162251AA

*- 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
Group Number: 1691408
Reported: 08/16/2016 11:00

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.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8510431	106	106	94	99
8510432	108	107	94	102
8510433	102	107	99	99
Blank	103	102	97	98
LCS	105	102	95	102
LCSD	106	101	95	100
Limits:	77-114	74-113	77-110	78-110

*- 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

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 169408 Sample # 8510427-33

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025916.616.1640
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: [X] Boeing EHS [ ] Other (specify): _____
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 List)	(5) Remarks/Comments
BOP-13ds-0816	8/4/16	1500	H_2O	3	X	
BOP-13dg-0816	8/4/16	1425	"	3	X	
BOP-31dg-0816	8/4/16	1535	"	3	X	
BOP-23dg-0816	8/4/16	1550	"	3	X	
BOP-42ds-0816	8/4/16	1350	"	3	X	
BOP-42dg-0816	8/4/16	1405	"	3	X	
Trip Blanks	7/15/16	—	↓	2	X	

(6) Turnaround Time Requested (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
L Warbel	8/4/16 1630		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 8-5-16 / 1000

Relinquished by commercial carrier (circle): (UPS) FedEx Other: _____
Temperature upon Receipt: 1.4-3.4 °C
Custody Seals Intact?: (Yes) No

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Sample Administration Receipt Documentation Log

Doc Log ID: 156970

Group Number(s): 1691408

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/05/2016 10:00
Number of Packages:	3	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:	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 12:00 on 08/05/2016

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	1.4	DT	Wet	Y	Bagged	N
2	DT131	3.4	DT	Wet	Y	Bagged	N
3	DT131	1.7	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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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 ≥ 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:

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

Prepared for:

The Boeing Company

Report Date: August 20, 2016

Project: Boeing of Portland 025116.616.640 TSA

Submittal Date: 08/11/2016
Group Number: 1693903
PO Number: 0025116.616.640
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-20dg-0816 Water	8521863
BOP-20ds-0816 Water	8521864
BOP-21ds-0816 Water	8521865
BOP-60dg-0816 Water	8521866
BOP-61dg-0816 Water	8521867
BOP-Y-0816 Water	8521868
BOP-Z-0816 Water	8521869
BOP-22Rds-0816 Water	8521870
Trip Blank Water	8521871
BOP-31ds-0816 Water	8521872
BOP-61ds-0816 Water	8521873
BOP-62ds-0816 Water	8521874
BOP-65ds-0816 Water	8521875
BOP-66ds-0816 Water	8521876
EW-3-0816 Water	8521877
EW-13-0816 Water	8521878

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



(510) 672-3979

Project Name: Boeing of Portland 025116.616.640 TSA
LL Group #: 1693903

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8521867, 8521871, 8521872, 8521873

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample #s: 8521863, 8521864, 8521865, 8521866, 8521869, 8521870, 8521874, 8521875, 8521876, 8521877, 8521878

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample #s: 8521868

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone
The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-29

Batch #: H162281AA (Sample number(s): 8521867, 8521871-8521873)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: 1,1-Dichloroethene, 112Trichloro122Trifluoroethane

Batch #: H162291AA (Sample number(s): 8521863-8521866, 8521869-8521870, 8521874-8521878 UNSPK: 8521864)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: 112Trichloro122Trifluoroethane

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: 1,1-Dichloroethene, 112Trichloro122Trifluoroethane

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: 2-Butanone

Batch #: H162301AA (Sample number(s): 8521868)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 4-Methyl-2-pentanone, 2-Hexanone

Sample Description: BOP-20dg-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521863
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 12:30 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

20-DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**47**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-20dg-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521863
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 12:30 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

20-DG

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 12:32	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 12:32	Kerri E Legerlotz	1

Sample Description: BOP-20ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521864
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 12:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

20-DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**33**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-20ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521864
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 12:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

20-DS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 12:52	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 12:52	Kerri E Legerlotz	1

Sample Description: BOP-21ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521865
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 13:00 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

21-DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**74**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**1**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**5.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-21ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521865
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 13:00 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

21-DS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 13:12	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 13:12	Kerri E Legerlotz	1

Sample Description: BOP-60dg-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521866
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 11:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

60-DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**54**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-60dg-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521866
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 11:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

60-DG

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 15:55	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 15:55	Kerri E Legerlotz	1

Sample Description: BOP-61dg-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521867
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 12:05 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

61-DG

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**30**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.7**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**5.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample Description: BOP-61dg-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521867
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 12:05 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

61-DG

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162281AA	08/15/2016 18:34	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162281AA	08/15/2016 18:34	Kerri E Legerlotz	1

Sample Description: BOP-Y-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521868
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 08:30 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BOP-Y

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**57**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.3**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**2.3**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Chloromethane	-21
Chloroethane	-24
2-Butanone	-32
4-Methyl-2-Pentanone	-34
2-Hexanone	-36

Sample Description: BOP-Y-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521868
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 08:30 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BOP-Y

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 4-Methyl-2-Pentanone and 2-Hexanone

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The reported concentration in the associated sample(s) is considered to be estimated. The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
Acetone	-29

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162301AA	08/17/2016 19:02	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162301AA	08/17/2016 19:02	Kerri E Legerlotz	1

Sample Description: BOP-Z-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521869
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 09:00 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BOP-Z

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		ug/l		ug/l	
11996	**Acetone**	67-64-1	**33**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-Z-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521869
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 09:00 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BOP-Z

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 16:15	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 16:15	Kerri E Legerlotz	1

Sample Description: BOP-22Rds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521870
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 13:25 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

22RDS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**43**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-22Rds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521870
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 13:25 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

22RDS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 16:35	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 16:35	Kerri E Legerlotz	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521871
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016 The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BPTB2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample Description: Trip Blank Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521871
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/08/2016

The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BPTB2

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162281AA	08/15/2016 14:50	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162281AA	08/15/2016 14:50	Kerri E Legerlotz	1

Sample Description: BOP-31ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521872
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 10:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

31-DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample Description: BOP-31ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521872
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 10:15 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

31-DS

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162281AA	08/15/2016 19:15	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162281AA	08/15/2016 19:15	Kerri E Legerlotz	1

Sample Description: BOP-61ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521873
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 09:45 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

61-DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.6**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	**Tetrachloroethene**	127-18-4	**0.2**		0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**5.8**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
1,1-Dichloroethene	25
Freon 113	33
Carbon Tetrachloride	22

Sample Description: BOP-61ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521873
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 09:45 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

61-DS

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162281AA	08/15/2016 19:35	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162281AA	08/15/2016 19:35	Kerri E Legerlotz	1

Sample Description: BOP-62ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521874
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 08:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

62-DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-62ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521874
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 08:35 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

62-DS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 16:55	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 16:55	Kerri E Legerlotz	1

Sample Description: BOP-65ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521875
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 12:45 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

65-DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.9**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-65ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521875
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 12:45 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

65-DS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 17:16	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 17:16	Kerri E Legerlotz	1

Sample Description: BOP-66ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521876
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 11:10 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

66-DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**1.1**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: BOP-66ds-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521876
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 11:10 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

66-DS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 17:36	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 17:36	Kerri E Legerlotz	1

Sample Description: EW-3-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521877
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 09:10 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BPEW3

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	**Acetone**	67-64-1	**150**		5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	**Toluene**	108-88-3	**0.2**		0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: EW-3-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521877
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 09:10 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BPEW3

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 18:58	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 18:58	Kerri E Legerlotz	1

Sample Description: EW-13-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521878
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 11:20 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BEW13

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**0.6**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
2-Butanone	-27
4-Methyl-2-Pentanone	-30
2-Hexanone	-32

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a

Sample Description: EW-13-0816 Water
Boeing Portland 0025116.116.640 TSA

LL Sample # WW 8521878
LL Group # 1693903
Account # 13419

Project Name: Boeing of Portland 025116.616.640 TSA

Collected: 08/10/2016 11:20 by EMW The Boeing Company

Submitted: 08/11/2016 09:50
Reported: 08/20/2016 22:00

BEW13

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor

continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standard shows adequate sensitivity at or below the reporting limit.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H162291AA	08/16/2016 19:18	Kerri E Legerlotz	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H162291AA	08/16/2016 19:18	Kerri E Legerlotz	1

Quality Control Summary

Client Name: The Boeing Company
Group Number: 1693903
Reported: 08/20/2016 22:00

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: H162281AA	Sample number(s): 8521867,8521871-8521873		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162291AA	Sample number(s): 8521863-8521866,8521869-8521870,8521874-8521878		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2

*- 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: 08/20/2016 22:00

Group Number: 1693903

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5
Batch number: H162301AA	Sample number(s): 8521868		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5

*- 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: 08/20/2016 22:00

Group Number: 1693903

Method Blank (continued)

Analysis Name	Result ug/l		LOQ ug/l
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

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: H162281AA	Sample number(s): 8521867,8521871-8521873								
Acetone	37.5	29.95	37.5	29.52	80	79	65-130	1	30
Benzene	5.00	5.61	5.00	5.33	112	107	80-120	5	30
Bromodichloromethane	5.00	5.45	5.00	5.21	109	104	80-120	5	30
Bromoform	5.00	5.01	5.00	4.82	100	96	62-128	4	30
Bromomethane	5.00	4.85	5.00	4.77	97	95	62-131	2	30
2-Butanone	37.5	29.92	37.5	30.16	80	80	66-135	1	30
Carbon Disulfide	5.00	5.91	5.00	5.57	118	111	65-120	6	30
Carbon Tetrachloride	5.00	5.79	5.00	5.49	116	110	79-124	5	30
Chlorobenzene	5.00	5.12	5.00	5.00	102	100	80-120	2	30
Chloroethane	5.00	4.76	5.00	4.56	95	91	63-125	4	30
Chloroform	5.00	5.38	5.00	5.18	108	104	80-120	4	30
Chloromethane	5.00	4.86	5.00	4.69	97	94	55-126	3	30
Dibromochloromethane	5.00	5.10	5.00	4.98	102	100	78-127	2	30
1,1-Dichloroethane	5.00	5.70	5.00	5.47	114	109	75-120	4	30
1,2-Dichloroethane	5.00	5.23	5.00	5.13	105	103	72-127	2	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.
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Quality Control Summary

Client Name: The Boeing Company
Reported: 08/20/2016 22:00

Group Number: 1693903

LCS/LCSD (continued)

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
1,1-Dichloroethene	5.00	6.07	5.00	5.75	121*	115	76-120	5	30
cis-1,2-Dichloroethene	5.00	5.61	5.00	5.30	112	106	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.91	5.00	5.61	118	112	80-120	5	30
1,2-Dichloropropane	5.00	5.68	5.00	5.32	114	106	80-120	6	30
cis-1,3-Dichloropropene	5.00	5.27	5.00	5.05	105	101	80-124	4	30
trans-1,3-Dichloropropene	5.00	4.88	5.00	4.73	98	95	77-121	3	30
Ethylbenzene	5.00	5.07	5.00	4.93	101	99	80-120	3	30
2-Hexanone	25	18.97	25	18.88	76	76	73-128	0	30
4-Methyl-2-pentanone	25	19.44	25	19.39	78	78	71-129	0	30
Methylene Chloride	5.00	5.66	5.00	5.40	113	108	80-120	5	30
Styrene	5.00	5.11	5.00	4.93	102	99	80-120	4	30
1,1,2,2-Tetrachloroethane	5.00	4.75	5.00	4.75	95	95	75-123	0	30
Tetrachloroethene	5.00	5.12	5.00	4.92	102	98	80-120	4	30
Toluene	5.00	5.18	5.00	5.06	104	101	80-120	2	30
112Trichloro122Trifluoroethane	5.00	6.33	5.00	6.02	127*	120	75-120	5	30
1,1,1-Trichloroethane	5.00	5.53	5.00	5.28	111	106	79-120	5	30
1,1,2-Trichloroethane	5.00	5.17	5.00	4.98	103	100	80-120	4	30
Trichloroethene	5.00	5.63	5.00	5.35	113	107	80-120	5	30
Trichlorofluoromethane	5.00	5.40	5.00	5.12	108	102	71-131	5	30
Vinyl Acetate	12.5	12.18	12.5	12.11	97	97	63-122	1	30
Vinyl Chloride	5.00	4.99	5.00	4.76	100	95	62-128	5	30
m+p-Xylene	10	10.31	10	9.95	103	100	80-120	4	30
o-Xylene	5.00	5.03	5.00	4.89	101	98	80-120	3	30
Batch number: H162291AA	Sample number(s): 8521863-8521866,8521869-8521870,8521874-8521878								
Acetone	37.5	31.85			85		65-130		
Benzene	5.00	5.29			106		80-120		
Bromodichloromethane	5.00	5.17			103		80-120		
Bromoform	5.00	4.98			100		62-128		
Bromomethane	5.00	4.51			90		62-131		
2-Butanone	37.5	29.99			80		66-135		
Carbon Disulfide	5.00	5.51			110		65-120		
Carbon Tetrachloride	5.00	5.48			110		79-124		
Chlorobenzene	5.00	5.10			102		80-120		
Chloroethane	5.00	4.22			84		63-125		
Chloroform	5.00	5.13			103		80-120		
Chloromethane	5.00	4.11			82		55-126		
Dibromochloromethane	5.00	4.99			100		78-127		
1,1-Dichloroethane	5.00	5.24			105		75-120		
1,2-Dichloroethane	5.00	4.73			95		72-127		
1,1-Dichloroethene	5.00	5.88			118		76-120		
cis-1,2-Dichloroethene	5.00	5.50			110		80-120		
trans-1,2-Dichloroethene	5.00	5.78			116		80-120		
1,2-Dichloropropane	5.00	5.17			103		80-120		
cis-1,3-Dichloropropene	5.00	4.99			100		80-124		
trans-1,3-Dichloropropene	5.00	4.59			92		77-121		
Ethylbenzene	5.00	4.93			99		80-120		
2-Hexanone	25	19.04			76		73-128		
4-Methyl-2-pentanone	25	19.28			77		71-129		
Methylene Chloride	5.00	5.46			109		80-120		

*- 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: 08/20/2016 22:00

Group Number: 1693903

LCS/LCSD (continued)

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
Styrene	5.00	5.00			100		80-120		
1,1,2,2-Tetrachloroethane	5.00	4.78			96		75-123		
Tetrachloroethene	5.00	5.09			102		80-120		
Toluene	5.00	5.07			101		80-120		
112Trichloro122Trifluoroethane	5.00	6.04			121*		75-120		
1,1,1-Trichloroethane	5.00	5.25			105		79-120		
1,1,2-Trichloroethane	5.00	5.04			101		80-120		
Trichloroethene	5.00	5.51			110		80-120		
Trichlorofluoromethane	5.00	5.11			102		71-131		
Vinyl Acetate	12.5	10.62	12.5	10.82	85	87	63-122	2	30
Vinyl Chloride	5.00	4.31			86		62-128		
m+p-Xylene	10	10.1			101		80-120		
o-Xylene	5.00	4.96			99		80-120		
Batch number: H162301AA	Sample number(s): 8521868								
Acetone	37.5	28.51	37.5	28.08	76	75	65-130	2	30
Benzene	5.00	5.12	5.00	4.87	102	97	80-120	5	30
Bromodichloromethane	5.00	4.97	5.00	4.73	99	95	80-120	5	30
Bromoform	5.00	5.01	5.00	4.65	100	93	62-128	7	30
Bromomethane	5.00	4.63	5.00	4.56	93	91	62-131	1	30
2-Butanone	37.5	26.62	37.5	26.71	71	71	66-135	0	30
Carbon Disulfide	5.00	5.27	5.00	4.99	105	100	65-120	5	30
Carbon Tetrachloride	5.00	5.48	5.00	5.07	110	101	79-124	8	30
Chlorobenzene	5.00	5.34	5.00	4.98	107	100	80-120	7	30
Chloroethane	5.00	4.26	5.00	4.10	85	82	63-125	4	30
Chloroform	5.00	4.91	5.00	4.63	98	93	80-120	6	30
Chloromethane	5.00	4.46	5.00	4.27	89	85	55-126	4	30
Dibromochloromethane	5.00	5.18	5.00	4.97	104	99	78-127	4	30
1,1-Dichloroethane	5.00	5.10	5.00	4.81	102	96	75-120	6	30
1,2-Dichloroethane	5.00	4.57	5.00	4.36	91	87	72-127	5	30
1,1-Dichloroethene	5.00	5.72	5.00	5.38	114	108	76-120	6	30
cis-1,2-Dichloroethene	5.00	5.37	5.00	5.04	107	101	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.52	5.00	5.27	110	105	80-120	5	30
1,2-Dichloropropane	5.00	4.96	5.00	4.73	99	95	80-120	5	30
cis-1,3-Dichloropropene	5.00	4.76	5.00	4.49	95	90	80-124	6	30
trans-1,3-Dichloropropene	5.00	4.71	5.00	4.40	94	88	77-121	7	30
Ethylbenzene	5.00	5.14	5.00	4.80	103	96	80-120	7	30
2-Hexanone	25	16.94	25	16.68	68*	67*	73-128	2	30
4-Methyl-2-pentanone	25	16.95	25	16.73	68*	67*	71-129	1	30
Methylene Chloride	5.00	5.23	5.00	4.91	105	98	80-120	6	30
Styrene	5.00	5.19	5.00	4.85	104	97	80-120	7	30
1,1,2,2-Tetrachloroethane	5.00	4.74	5.00	4.63	95	93	75-123	2	30
Tetrachloroethene	5.00	5.40	5.00	5.01	108	100	80-120	8	30
Toluene	5.00	5.24	5.00	4.93	105	99	80-120	6	30
112Trichloro122Trifluoroethane	5.00	6.00	5.00	5.46	120	109	75-120	9	30
1,1,1-Trichloroethane	5.00	5.24	5.00	4.85	105	97	79-120	8	30
1,1,2-Trichloroethane	5.00	5.24	5.00	4.98	105	100	80-120	5	30
Trichloroethene	5.00	5.40	5.00	5.06	108	101	80-120	6	30
Trichlorofluoromethane	5.00	5.36	5.00	4.98	107	100	71-131	7	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: 08/20/2016 22:00

Group Number: 1693903

LCS/LCSD (continued)

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
Vinyl Acetate	12.5	10.53	12.5	9.32	84	75	63-122	12	30
Vinyl Chloride	5.00	4.71	5.00	4.49	94	90	62-128	5	30
m+p-Xylene	10	10.49	10	9.87	105	99	80-120	6	30
o-Xylene	5.00	5.16	5.00	4.88	103	98	80-120	6	30

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: H162291AA	Sample number(s): 8521863-8521866,8521869-8521870,8521874-8521878 UNSPK: 8521864									
Acetone	33.25	37.5	60.98	37.5	61.58	74	76	65-130	1	30
Benzene	0.2 U	5.00	5.33	5.00	5.53	107	111	80-120	4	30
Bromodichloromethane	0.5 U	5.00	5.07	5.00	5.49	101	110	80-120	8	30
Bromoform	0.5 U	5.00	4.88	5.00	5.45	98	109	62-128	11	30
Bromomethane	0.5 U	5.00	4.64	5.00	4.90	93	98	62-131	6	30
2-Butanone	5.0 U	37.5	44.47	37.5	26.54	119	71	66-135	51*	30
Carbon Disulfide	0.5 U	5.00	5.84	5.00	5.87	117	117	65-120	0	30
Carbon Tetrachloride	0.2 U	5.00	5.73	5.00	6.03	115	121	79-124	5	30
Chlorobenzene	0.5 U	5.00	5.23	5.00	5.65	105	113	80-120	8	30
Chloroethane	0.5 U	5.00	4.46	5.00	4.66	89	93	63-125	4	30
Chloroform	0.2 U	5.00	5.09	5.00	5.33	102	107	80-120	5	30
Chloromethane	0.5 U	5.00	4.34	5.00	4.60	87	92	55-126	6	30
Dibromochloromethane	0.5 U	5.00	5.14	5.00	5.64	103	113	78-127	9	30
1,1-Dichloroethane	0.5 U	5.00	5.31	5.00	5.40	106	108	75-120	2	30
1,2-Dichloroethane	0.2 U	5.00	4.53	5.00	4.74	91	95	72-127	5	30
1,1-Dichloroethene	0.2 U	5.00	6.12	5.00	6.44	122*	129*	76-120	5	30
cis-1,2-Dichloroethene	0.2 U	5.00	5.54	5.00	5.69	111	114	80-120	3	30
trans-1,2-Dichloroethene	0.2 U	5.00	5.86	5.00	5.97	117	119	80-120	2	30
1,2-Dichloropropane	0.5 U	5.00	5.09	5.00	5.43	102	109	80-120	6	30
cis-1,3-Dichloropropene	0.2 U	5.00	4.75	5.00	5.21	95	104	80-124	9	30
trans-1,3-Dichloropropene	0.2 U	5.00	4.53	5.00	4.97	91	99	77-121	9	30
Ethylbenzene	0.5 U	5.00	5.18	5.00	5.54	104	111	80-120	7	30
2-Hexanone	5.0 U	25	18.45	25	19.63	74	79	73-128	6	30
4-Methyl-2-pentanone	5.0 U	25	18.39	25	19.73	74	79	71-129	7	30
Methylene Chloride	0.5 U	5.00	5.26	5.00	5.36	105	107	80-120	2	30
Styrene	0.5 U	5.00	5.08	5.00	5.54	102	111	80-120	9	30
1,1,2,2-Tetrachloroethane	0.2 U	5.00	4.73	5.00	5.11	95	102	75-123	8	30
Tetrachloroethene	0.2 U	5.00	5.56	5.00	5.79	111	116	80-120	4	30
Toluene	0.2 U	5.00	5.31	5.00	5.68	106	114	80-120	7	30
112Trichloro122Trifluoroethane	0.5 U	5.00	6.53	5.00	6.60	131*	132*	75-120	1	30
1,1,1-Trichloroethane	0.5 U	5.00	5.46	5.00	5.67	109	113	79-120	4	30
1,1,2-Trichloroethane	0.2 U	5.00	5.03	5.00	5.61	101	112	80-120	11	30
Trichloroethene	0.201	5.00	5.78	5.00	6.09	112	118	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: 08/20/2016 22:00

Group Number: 1693903

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
Trichlorofluoromethane	0.5	U	5.00	5.50	5.00	5.97	110	119	71-131	8	30
Vinyl Chloride	0.2	U	5.00	4.71	5.00	5.01	94	100	62-128	6	30
m+p-Xylene	0.5	U	10	10.56	10	11.2	106	112	80-120	6	30
o-Xylene	0.5	U	5.00	5.09	5.00	5.48	102	110	80-120	8	30

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 Boeing 38
Batch number: H162281AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8521867	101	101	99	99
8521871	100	101	98	98
8521872	100	100	100	98
8521873	101	100	99	97
Blank	102	106	98	98
LCS	107	104	95	101
LCSD	104	102	96	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Boeing 38
Batch number: H162291AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8521863	101	100	98	97
8521864	100	102	98	97
8521865	102	103	96	97
8521866	105	102	94	97
8521869	105	105	94	97
8521870	104	100	95	96
8521874	103	102	96	96
8521875	102	100	97	95
8521876	98	100	100	97
8521877	100	107	98	97
8521878	100	103	98	96
Blank	101	102	97	96
LCS	104	100	96	96
LCSD	101	101	97	97
MS	102	101	98	97
MSD	100	103	97	99
Limits:	77-114	74-113	77-110	78-110

*- 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
Group Number: 1693903
Reported: 08/20/2016 22:00

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: 8260C Boeing 38
Batch number: H162301AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8521868	100	102	99	96
Blank	103	100	96	95
LCS	100	102	99	97
LCSD	101	100	99	96
Limits:	77-114	74-113	77-110	78-110

*- 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

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Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1693163 Sample # 582183-78

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.1616.1640
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 List)	(5) Remarks/Comments
BOP-20dg-0816	8/8/16	1230	H2O	3	X	
BOP-20ds-0816	8/8/16	1235	H2O	3	X	
BOP-21ds-0816	8/8/16	1300	H2O	3	X	
BOP-60dg-0816	8/8/16	1115	H2O	3	X	
BOP-61dg-0816	8/8/16	1205	H2O	3	X	
BOP-y-0816	8/8/16	0930	H2O	3	X	
BOP-Z-0816	8/8/16	0900	H2O	2	X	
BOP-22Rds-0816	8/8/16	1325	H2O	3	X	
Trip Blanks	—	—	H2O	2	X	
BOP-31ds-0816	8/10/16	1015	H2O	3	X	
BOP-61ds-0816	8/10/16	0945	H2O	3	X	
BOP-62ds-0816	8/10/16	0835	H2O	3	X	
BOP-65ds-0816	8/10/16	1245	H2O	3	X	
BOP-66ds-0816	8/10/16	1110	H2O	3	X	
EW-3-0816	8/10/16	0910	H2O	3	X	

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	8/10/16 1600		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by: [signature]	Date/Time 8-11-16 950
Relinquished by commercial carrier (circle): UPS FedEx Other:		Temperature upon Receipt: 2.3 °C	
		Custody Seals Intact?: (Yes) No	

Eurofins Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories. The yellow copy should be retained by the client.
Issued by Dept. 40 Management
7063.02

Boeing Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 13419 For Eurofins Lancaster Laboratories use only Group # 1693403 Sample # 8521863-78

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.616.640
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 List)	(5) Remarks/Comments
EW-13-0816	8/10/16	1120	H2O	3	X	

(6) Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
[signature]	8/10/16 1600		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	8-11-16 / 950

Relinquished by commercial carrier (circle): UPS FedEx Other: _____
Temperature upon Receipt: 2.3 °C
Custody Seals Intact?: (Yes) No

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Sample Administration Receipt Documentation Log

Doc Log ID: 157978

Group Number(s): 1693903

Client: Boeing

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	08/11/2016 9:50
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	2
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 Joseph Huber (7831) at 13:44 on 08/11/2016

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	2.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

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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 ≥ 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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4Q16 TSA

Technical Memorandum

TO: Chris Kimmel, Project Manager

FROM: Kristi Schultz and Danille Jorgensen

DATE: December 9, 2016

RE: **Boeing Portland (TSA)**
Fourth Quarter 2016 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 2 groundwater samples and 1 trip blank collected during the fourth quarter 2016 TSA water quality sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental LLC (LLI), located in Lancaster, Pennsylvania. This data quality evaluation covers LLI data package 1734527. Samples submitted to LLI were analyzed for volatile organic compounds ([VOCs]; US Environmental Protection Agency [EPA] Method SW8260C).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Data Review* (EPA 1999, 2008). Landau Associates performed an EPA-equivalent Level II verification and validation check on each laboratory data package, which included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. Data validation qualifiers are summarized in Table 1.

Chain-of-Custody Records

A signed chain-of-custody (COC) record was attached to the data packages. The laboratory received all samples in good condition. All analyses were performed as requested. No special cleanups or handling methods were requested.

Upon receipt by LLI, the sample container information was compared to the associated chain-of-custody and the cooler temperatures were recorded. The coolers were received with temperatures within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times. No qualification of the data was necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for VOCs analysis. Target analytes were not detected at concentrations greater than the reporting limits in the associated method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

One trip blank was submitted to the laboratory for VOC analysis with each sample batch. Target analytes were not detected at concentrations greater than the reporting limits in the associated trip blanks. No qualification of the data was necessary. No field equipment blanks were submitted for analysis with this sample batch.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the VOCs analysis. Recovery values for the surrogate spikes were within the current laboratory-specified control limits. No qualification of the data was necessary.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

No matrix spikes were analyzed with this sample batch. No qualification of the data was determined necessary.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for VOCs analysis. Recoveries and RPDs for the laboratory control

samples and associated duplicates were within the current laboratory-specified control limits, with the following exceptions:

- The LCS/LCSD recoveries for 2-hexanone were below the laboratory-specified control limits. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.

Blind Field Duplicate Results

No blind field duplicates were submitted with this sample batch. No qualification of the data was determined necessary.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where high concentrations required dilution of the sample extracts.

Audit/Corrective Action Records

No audits were performed or required. No corrective action records were generated for this sample batch. Based on the laboratory's case narratives, continuing calibration verification (CCV) recovery results were within laboratory-specified control limits, with the following exceptions:

- The CCV recoveries were low for several VOC compounds. Associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates. Data accuracy was evaluated through laboratory control samples and surrogate spikes. No data were rejected.

LANDAU ASSOCIATES, INC.



Kristi Schultz
Data Specialist



Danille Jorgensen
Environmental Data Manager

DRJ/kes
[P:\025\116\FILERM\T\TSA\DATA\DV MEMOS TSA\2016\4Q16\TSA 4Q16 TM.DOCX]

References

EPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. edited by Office of Emergency and Remedial Response. Washington, DC: US Environmental Protection Agency.

EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. edited by Office of Superfund Remediation and Technology Innovation. Washington, DC: US Environmental Protection Agency.

Table 1
Summary of Data Qualifiers
Boeing Portland TSA Phase I

Data Package	Analyte	Result	Qualifier	Sample Number	Reason
1734527	2-Butanone	5.0 U	UJ	BOP-13ds-1116	Low continuing calibration recovery
1734527	4-Methyl-2-pentanone	5.0 U	UJ	BOP-13ds-1116	Low continuing calibration recovery
1734527	2-Hexanone	5.0 U	UJ	BOP-13ds-1116	Low continuing calibration recovery; low LCS/LCSD recovery
1734527	2-Butanone	5.0 U	UJ	BOP-31ds-1116	Low continuing calibration recovery
1734527	4-Methyl-2-pentanone	5.0 U	UJ	BOP-31ds-1116	Low continuing calibration recovery
1734527	2-Hexanone	5.0 U	UJ	BOP-31ds-1116	Low continuing calibration recovery; low LCS/LCSD recovery

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

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

Prepared for:

The Boeing Company

Report Date: November 25, 2016

Project: Portland/025116.616.640 TSA

Submittal Date: 11/17/2016
Group Number: 1734527
PO Number: 0025116.616.640
State of Sample Origin: OR

Client Sample Description	Lancaster Labs (LL) #
BOP-13ds-1116 Water	8702336
BOP-31ds-1116 Water	8702337
Trip Blank Water	8702338

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	Landau Associates	Attn: Dani Jorgensen
Electronic Copy To	Landau	Attn: Brett Borgeson
Electronic Copy To	Landau Associates	Attn: Terry McGourty
Electronic Copy To	Landau	Attn: Chris Kimmel

Respectfully Submitted,



Kay Hower

(510) 672-3979

Project Name: Portland/025116.616.640 TSA
LL Group #: 1734527

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:

SW-846 8260C, GC/MS Volatiles

Sample #s: 8702336, 8702337, 8702338

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.
The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26
2-hexanone	-26

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Batch #: H163272AA (Sample number(s): 8702336-8702338)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: 2-Hexanone

Sample Description: BOP-13ds-1116 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8702336
LL Group # 1734527
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 11/16/2016 11:00 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:44

B13DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	**cis-1,2-Dichloroethene**	156-59-2	**0.4**		0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	**Trichloroethene**	79-01-6	**3.2**		0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26

Sample Description: BOP-13ds-1116 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8702336
LL Group # 1734527
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 11/16/2016 11:00 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:44

B13DS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-hexanone		-26		

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 18:06	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 18:06	Kevin A Sposito	1

Sample Description: BOP-31ds-1116 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8702337
LL Group # 1734527
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 11/16/2016 12:20 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:44

B31DS

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26

Sample Description: BOP-31ds-1116 Water
Boeing Portland 0025116.616.640

LL Sample # WW 8702337
LL Group # 1734527
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 11/16/2016 12:20 by EMW The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:44

B31DS

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-hexanone		-26		

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 18:26	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 18:26	Kevin A Sposito	1

Sample Description: Trip Blank Water
Boeing Portland 0025116.616.640

LL Sample # WW 8702338
LL Group # 1734527
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 11/16/2016

The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:44

BOPT2

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**		**ug/l**	
11996	Acetone	67-64-1	5.0	U	5.0	1
11996	Benzene	71-43-2	0.2	U	0.2	1
11996	Bromodichloromethane	75-27-4	0.5	U	0.5	1
11996	Bromoform	75-25-2	0.5	U	0.5	1
11996	Bromomethane	74-83-9	0.5	U	0.5	1
11996	2-Butanone	78-93-3	5.0	U	5.0	1
11996	Carbon Disulfide	75-15-0	0.5	U	0.5	1
11996	Carbon Tetrachloride	56-23-5	0.2	U	0.2	1
11996	Chlorobenzene	108-90-7	0.5	U	0.5	1
11996	Chloroethane	75-00-3	0.5	U	0.5	1
11996	Chloroform	67-66-3	0.2	U	0.2	1
11996	Chloromethane	74-87-3	0.5	U	0.5	1
11996	Dibromochloromethane	124-48-1	0.5	U	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.5	U	0.5	1
11996	1,2-Dichloroethane	107-06-2	0.2	U	0.2	1
11996	1,1-Dichloroethene	75-35-4	0.2	U	0.2	1
11996	cis-1,2-Dichloroethene	156-59-2	0.2	U	0.2	1
11996	trans-1,2-Dichloroethene	156-60-5	0.2	U	0.2	1
11996	1,2-Dichloropropane	78-87-5	0.5	U	0.5	1
11996	cis-1,3-Dichloropropene	10061-01-5	0.2	U	0.2	1
11996	trans-1,3-Dichloropropene	10061-02-6	0.2	U	0.2	1
11996	Ethylbenzene	100-41-4	0.5	U	0.5	1
11996	2-Hexanone	591-78-6	5.0	U	5.0	1
11996	4-Methyl-2-pentanone	108-10-1	5.0	U	5.0	1
11996	Methylene Chloride	75-09-2	0.5	U	0.5	1
11996	Styrene	100-42-5	0.5	U	0.5	1
11996	1,1,2,2-Tetrachloroethane	79-34-5	0.2	U	0.2	1
11996	Tetrachloroethene	127-18-4	0.2	U	0.2	1
11996	Toluene	108-88-3	0.2	U	0.2	1
11996	112Trichloro122Trifluoroethane	76-13-1	0.5	U	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	0.5	U	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	0.2	U	0.2	1
11996	Trichloroethene	79-01-6	0.2	U	0.2	1
11996	Trichlorofluoromethane	75-69-4	0.5	U	0.5	1
11996	Vinyl Acetate	108-05-4	0.5	U	0.5	1
11996	Vinyl Chloride	75-01-4	0.2	U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5	U	0.5	1
11996	o-Xylene	95-47-6	0.5	U	0.5	1

The referenced method allows a maximum of 20% of the analytes in the calibration to exceed the 20% Drift continuing calibration verification criteria. The Analyte(s) exceeding 20% Drift is not detected in this sample.

The affected analyte(s) and response(s) are:

Analyte	Response (%Drift)
vinyl chloride	21
trichlorofluoromethane	23
2-butanone	-22%
4-methyl-2-pentanone	-26

Sample Description: Trip Blank Water
Boeing Portland 0025116.616.640

LL Sample # WW 8702338
LL Group # 1734527
Account # 13419

Project Name: Portland/025116.616.640 TSA

Collected: 11/16/2016

The Boeing Company

Submitted: 11/17/2016 09:30
Reported: 11/25/2016 08:44

BOPT2

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
	2-hexanone		-26		

A Method Detection Limit (MDL) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The MDL standards associated with the first and second trials show adequate sensitivity at or below the reporting limit.

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC/DoD Standards. The following analytes are accepted based on this allowance: 2-hexanone.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall 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 Boeing 38	SW-846 8260C	1	H163272AA	11/22/2016 15:43	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	H163272AA	11/22/2016 15:43	Kevin A Sposito	1

Quality Control Summary

Client Name: The Boeing Company
Reported: 11/25/2016 08:44

Group Number: 1734527

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: H163272AA	Sample number(s): 8702336-8702338		
Acetone	5.0	U	5.0
Benzene	0.2	U	0.2
Bromodichloromethane	0.5	U	0.5
Bromoform	0.5	U	0.5
Bromomethane	0.5	U	0.5
2-Butanone	5.0	U	5.0
Carbon Disulfide	0.5	U	0.5
Carbon Tetrachloride	0.2	U	0.2
Chlorobenzene	0.5	U	0.5
Chloroethane	0.5	U	0.5
Chloroform	0.2	U	0.2
Chloromethane	0.5	U	0.5
Dibromochloromethane	0.5	U	0.5
1,1-Dichloroethane	0.5	U	0.5
1,2-Dichloroethane	0.2	U	0.2
1,1-Dichloroethene	0.2	U	0.2
cis-1,2-Dichloroethene	0.2	U	0.2
trans-1,2-Dichloroethene	0.2	U	0.2
1,2-Dichloropropane	0.5	U	0.5
cis-1,3-Dichloropropene	0.2	U	0.2
trans-1,3-Dichloropropene	0.2	U	0.2
Ethylbenzene	0.5	U	0.5
2-Hexanone	5.0	U	5.0
4-Methyl-2-pentanone	5.0	U	5.0
Methylene Chloride	0.5	U	0.5
Styrene	0.5	U	0.5
1,1,2,2-Tetrachloroethane	0.2	U	0.2
Tetrachloroethene	0.2	U	0.2
Toluene	0.2	U	0.2
112Trichloro122Trifluoroethane	0.5	U	0.5
1,1,1-Trichloroethane	0.5	U	0.5
1,1,2-Trichloroethane	0.2	U	0.2
Trichloroethene	0.2	U	0.2
Trichlorofluoromethane	0.5	U	0.5
Vinyl Acetate	0.5	U	0.5
Vinyl Chloride	0.2	U	0.2
m+p-Xylene	0.5	U	0.5
o-Xylene	0.5	U	0.5

*- 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: 11/25/2016 08:44

Group Number: 1734527

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: H163272AA	Sample number(s): 8702336-8702338								
Acetone	37.5	31.05	37.5	29.8	83	79	65-130	4	30
Benzene	5.00	5.21	5.00	5.39	104	108	80-120	3	30
Bromodichloromethane	5.00	5.30	5.00	5.34	106	107	80-120	1	30
Bromoform	5.00	4.61	5.00	4.97	92	99	62-128	7	30
Bromomethane	5.00	6.03	5.00	6.06	121	121	62-131	0	30
2-Butanone	37.5	28.03	37.5	29.1	75	78	66-135	4	30
Carbon Disulfide	5.00	4.36	5.00	4.57	87	91	65-120	5	30
Carbon Tetrachloride	5.00	4.85	5.00	5.12	97	102	79-124	6	30
Chlorobenzene	5.00	5.03	5.00	5.27	101	105	80-120	5	30
Chloroethane	5.00	5.82	5.00	5.91	116	118	63-125	2	30
Chloroform	5.00	5.02	5.00	5.12	100	102	80-120	2	30
Chloromethane	5.00	5.19	5.00	5.15	104	103	55-126	1	30
Dibromochloromethane	5.00	4.88	5.00	5.19	98	104	78-127	6	30
1,1-Dichloroethane	5.00	5.02	5.00	5.07	100	101	75-120	1	30
1,2-Dichloroethane	5.00	4.91	5.00	4.95	98	99	72-127	1	30
1,1-Dichloroethene	5.00	5.66	5.00	5.13	113	103	76-120	10	30
cis-1,2-Dichloroethene	5.00	5.11	5.00	5.27	102	105	80-120	3	30
trans-1,2-Dichloroethene	5.00	5.12	5.00	5.34	102	107	80-120	4	30
1,2-Dichloropropane	5.00	5.33	5.00	5.40	107	108	80-120	1	30
cis-1,3-Dichloropropene	5.00	5.37	5.00	5.33	107	107	80-124	1	30
trans-1,3-Dichloropropene	5.00	5.21	5.00	5.55	104	111	77-121	6	30
Ethylbenzene	5.00	5.03	5.00	5.33	101	107	80-120	6	30
2-Hexanone	25	17.38	25	18.12	70*	72*	73-128	4	30
4-Methyl-2-pentanone	25	22.12	25	18.28	88	73	71-129	19	30
Methylene Chloride	5.00	5.05	5.00	5.21	101	104	80-120	3	30
Styrene	5.00	5.32	5.00	5.60	106	112	80-120	5	30
1,1,2,2-Tetrachloroethane	5.00	5.32	5.00	5.50	106	110	75-123	3	30
Tetrachloroethene	5.00	4.71	5.00	5.10	94	102	80-120	8	30
Toluene	5.00	5.02	5.00	5.30	100	106	80-120	5	30
112Trichloro122Trifluoroethane	5.00	5.49	5.00	4.87	110	97	75-120	12	30
1,1,1-Trichloroethane	5.00	4.64	5.00	4.90	93	98	79-120	5	30
1,1,2-Trichloroethane	5.00	5.16	5.00	5.43	103	109	80-120	5	30
Trichloroethene	5.00	5.20	5.00	5.39	104	108	80-120	4	30
Trichlorofluoromethane	5.00	5.66	5.00	5.47	113	109	71-131	3	30
Vinyl Acetate	12.5	12.77	12.5	12.33	102	99	63-122	3	30
Vinyl Chloride	5.00	5.54	5.00	5.80	111	116	62-128	5	30
m+p-Xylene	10	10.02	10	10.93	100	109	80-120	9	30
o-Xylene	5.00	5.03	5.00	5.28	101	106	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
Group Number: 1734527
Reported: 11/25/2016 08:44

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 Boeing 38
Batch number: H163272AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8702336	102	104	97	95
8702337	105	107	96	95
8702338	98	103	100	97
Blank	98	103	100	95
LCS	100	104	97	101
LCSD	97	99	101	100
Limits:	77-114	74-113	77-110	78-110

*- 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

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Acct. # 13419 For Eurofins Lancaster Laboratories Environmental use only Group # 173527 Sample # 8702336-38

Please print. Instructions on reverse side correspond.

(1) Client Information

Site Location: Gresham, Oregon
Site Project: Boeing of Portland
Site Program/#: 025116.616.
Boeing PM: Mike Gleason
Consultant Contact: Chris Kimmel
Report To: Above
Invoice To: ☒ Boeing EHS ☐ Other (specify):
Sampler: EMW # of Coolers: 1

(2) Sample Identification	Collected Date	Collected Time	(3) Matrix	No. of Containers	(4) Analyses Requested: VOC (38 List)	(5) Remarks/Comments
BOP-13ds-1116	11/16/16	1100	H_2O	3	X	
BOP-31ds-1116	11/16/16	1220	H_2O	3	X	
Trip Blanks	—	—	H_2O	2	X	

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(6) **Turnaround Time Requested** (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour

Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time (7)
EMWabel	11/16/16 1600		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 11-17-16 930

Relinquished by commercial carrier (circle): UPS FedEx Other:

Temperature upon Receipt: 4.5 °C

Custody Seals Intact?: (Yes) No

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be given to the SeaTac Courier. The pink copy should be retained by the client.

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Sample Administration Receipt Documentation Log

Doc Log ID: 168493

Group Number(s): 1734527

Client: Boeing

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	11/17/2016 9:30
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OR		

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:	HCl
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 17:26 on 11/17/2016

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	1.5	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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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 ≥ 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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