DRAFT

05 DECEMBER 2016

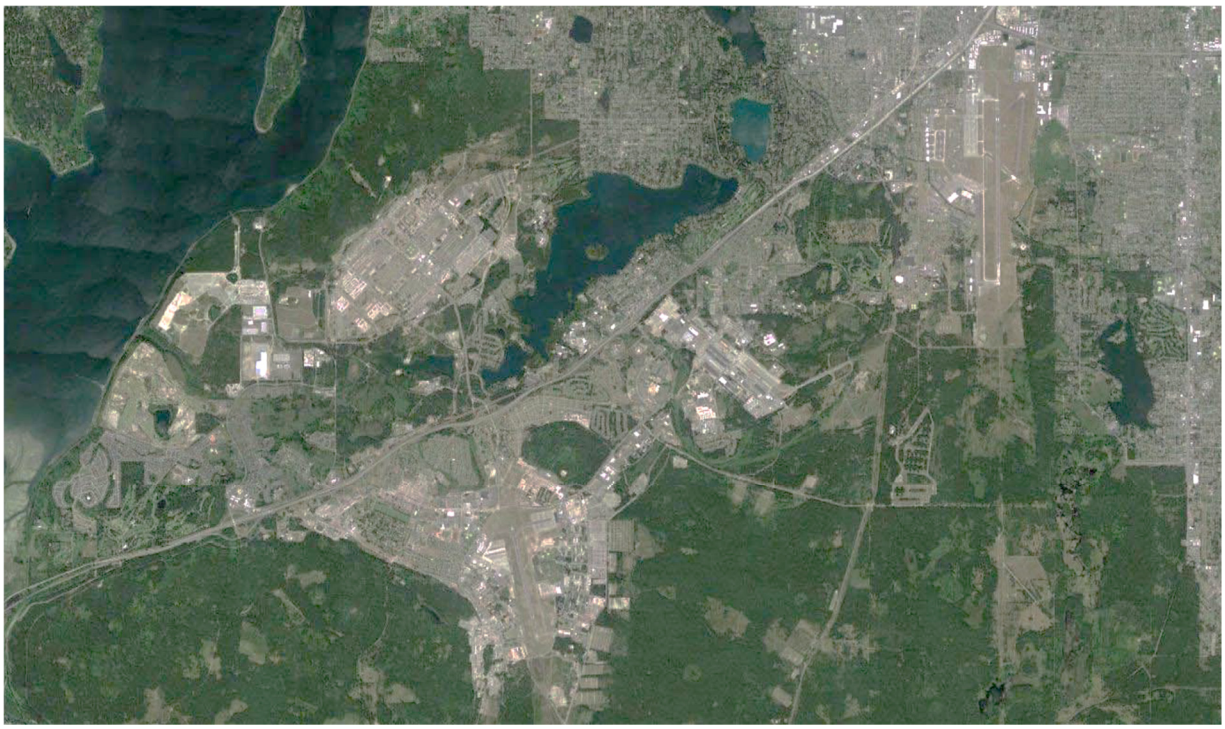
ANNUAL AIR SPARGE AND SOIL VAPOR EXTRACTION SYSTEM PERFORMANCE MONITORING REPORT – 2015

Joint Base Lewis-McChord Area of Concern 9-2
Lewis North Credit Union

Joint Base Lewis-McChord

Pierce County, Washington

Joint Base Lewis-McChord Public Works – Environmental Division
IMLM-PWE
MS 17 Box 339500
Joint Base Lewis-McChord, Washington 98433



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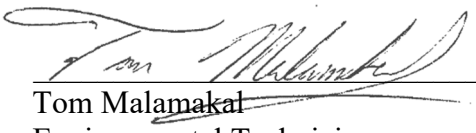
JOINT BASE LEWIS-MCCHORD AREA OF CONCERN 9-2
LEWIS NORTH CREDIT UNION

CONTRACT NO. W912DW-11-D-1031, TASK ORDER 0001

DECEMBER 5, 2016

JOINT BASE LEWIS-MCCHORD
PIERCE COUNTY, WASHINGTON

SEALASKA ENVIRONMENTAL SERVICES, LLC
POULSBO, WASHINGTON

Prepared by: 
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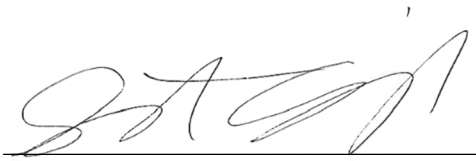
Approved by: 
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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
AS	air sparge
AS/SVE system	Lewis North Credit Union air sparge, soil vapor extraction, and sub-slab depressurization system
BTEX	benzene, toluene, ethylbenzene, and xylenes
CLARC	Cleanup Levels and Risk Calculation
Ecology	Washington State Department of Ecology
FLAO	Fort Lewis Agreed Order
HVAC	heating, ventilation, and air conditioning
IRP	Installation Restoration Program
JBLM	Joint Base Lewis-McChord
m^3/hr	cubic meters per hour
µg/m^3	microgram per cubic meter
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
PCS	petroleum contaminated soil
PID	photoionization detector
PQL	practical quantification limit
PSCAA	Puget Sound Clean Air Agency
psi	pounds per square inch
Sealaska	Sealaska Environmental Services, LLC
SIM	Selected Ion Mode
SSD	sub-slab depressurization
SVE	soil vapor extraction
SVP	soil vapor probe
TPH-G	gasoline-range total petroleum hydrocarbons
USACE	United States Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound
ZOI	zone of influence

1 INTRODUCTION

This annual performance monitoring report was prepared by Sealaska Environmental Services, LLC (Sealaska) for Joint Base Lewis-McChord (JBLM) Public Works, Installation Restoration Program (IRP). The report documents the 2015 operations, maintenance, and monitoring conducted at the Lewis North Credit Union air sparge (AS), soil vapor extraction (SVE), and sub-slab depressurization (SSD) system (hereafter referred to as AS/SVE system) at JBLM, Washington (Figure 1-1). The AS/SVE system was installed to remediate petroleum-impacted soil and groundwater at a former fueling station (former Building A1033, i.e., site Area of Concern [AOC] 9-2) which is currently the site of the Lewis North Credit Union (Figure 1-2).

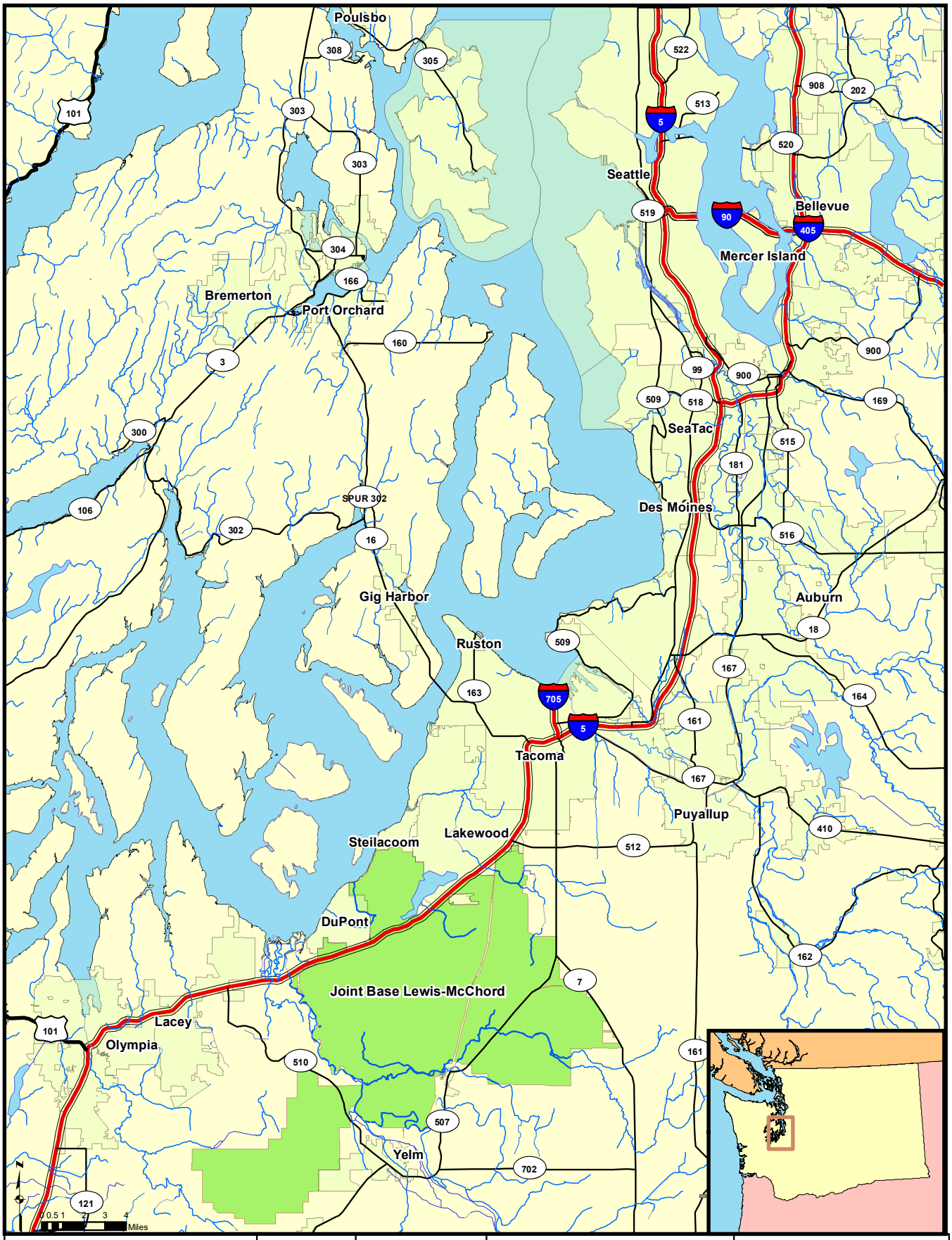
The purpose of this report is to present the information used to verify the effectiveness of the AS/SVE system in removing petroleum contamination from soil and groundwater at AOC 9-2.

Three types of monitoring are conducted to evaluate the effectiveness of the system:

- Performance monitoring;
- Groundwater monitoring; and
- Vapor intrusion and ambient air monitoring.

Operation, maintenance, and monitoring were conducted in 2015 in accordance with the Final Interim Action Workplan for Area of Concern 9-2, Sub-Slab Depressurization, Air Sparge and Soil Vapor Extraction System at Joint Base Lewis-McChord (Versar 2013a). Requirements included:

- Monitor and maintain operation and performance of the AS/SVE system;
- Monitor and maintain the effectiveness of SSD and vapor mitigation system for protection of building occupants from volatile organic compound (VOC) intrusion and removal of VOCs for site remediation;
- Monitor zone of influence (ZOI) of AS/SVE system to ensure VOC capture;
- Monitor VOC concentrations in SVE exhaust to ensure contaminant removal;



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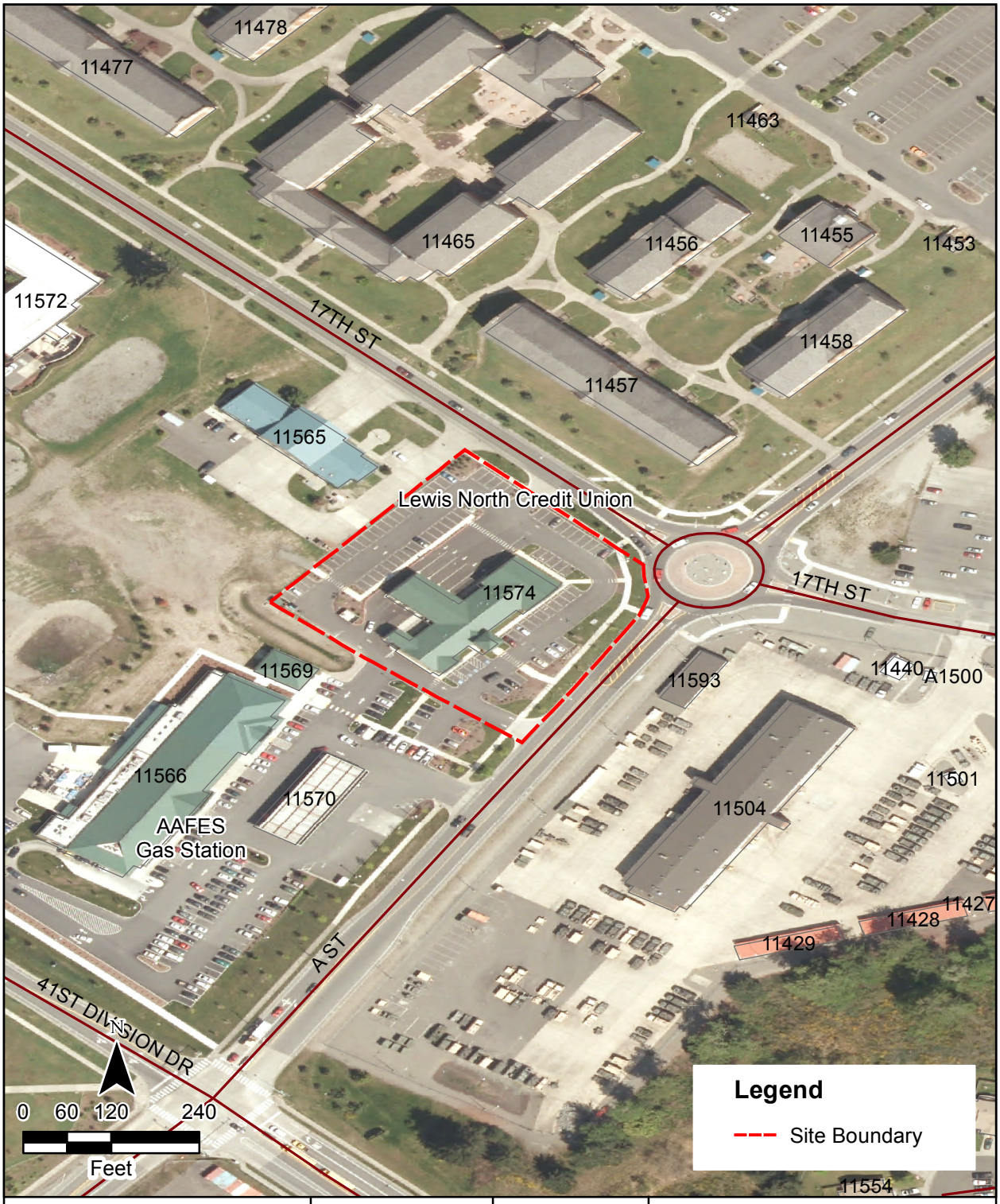
Map Data: Coordinate System: UTM Zone 10 Horizontal Datus: WGS 84	USACE	SEALASKA	**Figure 1-1** **Joint Base Lewis-McChord** **Location Map**	**Contract #** **W912DW-11-D-1031** **Task Order 0001**



Map Data: Coordinate System: UTM, Zone 10 Horizontal Datum: WGS 84	**USACE**	**SEALASKA**	Figure 1-2 Location of Lewis North Credit Union

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Date: 5/25/2016

- Confirm that VOCs concentrations associated with onsite residual contamination above regulatory criteria are not migrating into the Credit Union building; and
- Observe changes in VOC concentrations in groundwater through semi-annual monitoring to document the effectiveness of the remedial action. (Results of groundwater monitoring at AOC-9-2 are presented in the Fort Lewis Agreed Order (FLAO) Groundwater Monitoring Report (Sealaska 2016) and summarized in this report.)

Additionally, the Interim Action Workplan (Versar 2013a) defined criteria for system shutdown, including extent of VOC removal as indicated by SVE exhaust and VOC concentrations in soil vapor and groundwater. The goal of remediation by AS/SVE is to satisfy Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A cleanup standards for groundwater.

1.1 BACKGROUND

The former vehicle fueling station site is located on the southwest corner of the intersection of 17th Street and A Street on Lewis North (Figure 1-2). The station, constructed in 1967, consisted of a 10 feet x 15 feet office and a 30 feet x 60 feet metal canopy. Records indicate that two 4,000-gallon tanks were removed in 1990. Significant soil contamination was encountered during the removal of two additional 4,000-gallon gasoline underground storage tanks (USTs) in 1994. As a result, 1,138 cubic yards of petroleum contaminated soil (PCS) were removed at that time. The excavation was limited by groundwater and the foundation of the former Building A1033. A 1996 Site Assessment Report (USACE 1996) outlines events associated with the 1994 UST removal and subsequent investigations, including monitoring well installation.

In 1998, a 10,000-gallon gasoline tank, associated piping, and fuel dispenser were removed. No additional soil removal took place during the 1998 tank removal because no evidence of a release associated with this tank was discovered. The 1998 UST removal and details of associated site characterization were presented in the June 1999 Field Report for JBLM UST & PCS Removal and Disposal (Garry Struthers & Associates 1999).

The building was demolished in 2002. Two additional USTs were discovered during excavation for construction of a Credit Union building in June 2009. The USTs were located adjacent and north of the four USTs removed in 1990 and 1994. The tanks removed in 2009 were estimated to have a capacity of about 1,000 gallons each and appeared to have been closed-in-place with concrete fill. Laboratory results of the samples collected from the floors

and sidewalls of the UST excavation indicate that diesel was present in the soil at concentrations below MTCA Method A levels for unrestricted use.

Construction of the Credit Union building at AOC 9-2 was completed in early 2010. Because gasoline was present in groundwater underlying the site, JBLM elected to install the AS/SVE system during building construction for the protection of building occupants. Two AS wells were installed in May 2009. The SVE system began operation in February 2010. A November 2011 pilot test and February 2012 vapor intrusion monitoring were conducted to evaluate the effectiveness of AS/SVE for site remediation and SSD for protection of building occupants. The results of the pilot test and vapor intrusion monitoring (Versar 2013b) suggested that the existing system would be adequate to achieve site remediation. The AS system operation was initiated as part of the pilot test. The system has continued to be in operation since the pilot test start up.

Conditions at AOC 9-2, the site of a former vehicle fueling station, are described in the Fort Lewis Agreed Order Draft Feasibility Study for Seven Sites (Versar 2009a) and the Remedial Investigation Report for Nine Agreed Order Sites (Bussey 2008).

The chronology of investigation events area summarized in Table 1-1.

Table 1-1. Investigation Chronology

Event	Date
Gas station constructed	1967
Two 4,000 gallon gasoline tanks removed	1990
Two additional 4,000 gallon gasoline tanks removed	1994
Removal of 1,138 cubic yards of PCS	1994
Monitoring wells 95-A17-1, 95-A17-2, 95-A17-3, 95-A17-3A, and 95-A17-4 installed	1995
Groundwater monitoring	1995-current
Site Assessment Report completed (USACE 1996)	1996
Monitoring wells 96-A17-5 and 96-A17-6 installed	1996
Removal of 10,000 gallon gasoline tank	1998
Field Report for JBLM UST & PCS Removal and Disposal (Garry Struthers & Associates 1999)	1999
Building demolished	2002
Monitoring well 07-A17-7 installed	2007
Two additional diesel USTs discovered closed in place (1,000 gallons each)	2009
Soil samples found diesel concentrations below MTCA Method A associated with diesel USTs	2009
Construction of AS/SVE system	2009
Two air sparge wells installed	2009
Construction of Credit Union building	2010

Table 1-1. Investigation Chronology (continued)

Event	Date
Monitoring well 10-A17-8 installed	2010
Eleven soil vapor probes installed	2010
Pilot test, startup, and initial vapor intrusion monitoring completed (Versar 2013b)	2011-2012
AS/SVE system operation and monitoring	2012-current
Vapor intrusion monitoring	2012, 2014, 2015
Soil vapor and pressure monitoring	2012, 2015

Notes:
AS/SVE – air sparge/soil vapor extraction
MTCA – Model Toxics Control Act
PCS – petroleum contaminated soil
USACE – United States Army Corps of Engineers
UST – underground storage tank

1.2 REPORT ORGANIZATION

This report is organized as follows:

Section 1 **Introduction** – provides an overview of the project and the site description and background.

Section 2 **System Description** – provides a description of the AS/SVE system and components.

Section 3 **Performance Monitoring and Maintenance --** describes monitoring and maintenance activities completed during the performance period.

Section 4 **Groundwater Monitoring** – provides a summary of the semi-annual groundwater monitoring completed at the site and results.

Section 5 **Vapor Intrusion and Ambient Air Monitoring** – presents a summary of the annual vapor intrusion and ambient air monitoring and results.

Section 6 **Deviations from Interim Action Workplan** – provides a list of deviations from the requirements of the Workplan.

Section 7 **Conclusions**

Section 8 **Recommendations**

Section 9 **References**

2 SYSTEM DESCRIPTION

This section provides a brief description of the AS/SVE system. Figure 2-1 shows the layout of the SVE system. A vertical cross-section of the system beneath the Credit Union building is shown in Figure 2-2. A detailed description of system design is presented in the Draft Design Report, Air Sparge and Soil Vapor Extraction System, Fort Lewis Area of Concern 9-2 (Versar 2009b). In-depth AS/SVE system descriptions are provided in the Final Interim Action Workplan (Versar 2013a) and Sub-slab Depressurization, Air Sparge and Soil Vapor Extraction System, Pilot Test Startup and Vapor Intrusion Monitoring Report (Versar 2013b).

2.1 VAPOR BARRIER DESCRIPTION

A vapor barrier underlies the building slab. A combination of the sub-slab vapor barrier and sealed slab penetrations provides passive protection against fuel vapors entering the building. Vapor sampling ports penetrate the building footings at five points to allow for measurement of vacuum pressure and sub-slab air quality. Penetrations in the building slab were sealed during construction to reduce the potential for vapors entering the building or escaping.

2.2 SOIL VAPOR EXTRACTION/SUB-SLAB DEPRESSURIZATION SYSTEM DESCRIPTION

The SVE system consists of a vacuum blower housed in a small shed on a concrete pad located near the southwest corner of the site adjacent to the stormwater pond (see Figure 2-1). The SVE system maintains a negative pressure under the slab and vapor barrier. In addition, the building heating, ventilation, and air conditioning (HVAC) system maintains a positive pressure in the building interior. By maintaining this pressure differential over the slab and sub-slab system, soil vapors are drawn into the underlying extraction laterals, and away from the building.

Approximately 95% of the building site is covered with either asphalt or concrete. The capped site minimizes infiltration of surface air, maximizing the effectiveness of the SVE system. In addition, landscaped areas along the building foundation are planted with grass rather than less dense shrubbery.

2.3 AIR SPARGE SYSTEM DESCRIPTION

Figure 2-1 shows the site plan including the AS system layout. The AS system consists of a rotary vane blower, piping, and two vertical AS wells.

The AS blower is installed in a concrete vault located in the landscaped strip at the east edge of the property. The blower supplies air to the two sparge wells via a manifold (Figure 2-1, ASW-1 and ASW-2). Pressure indicators, flow regulating valves, and check valves are installed on the air supply manifold in the vaults at the top of the air sparge wells. Flow gauges are installed at each well head to measure air flow rate.

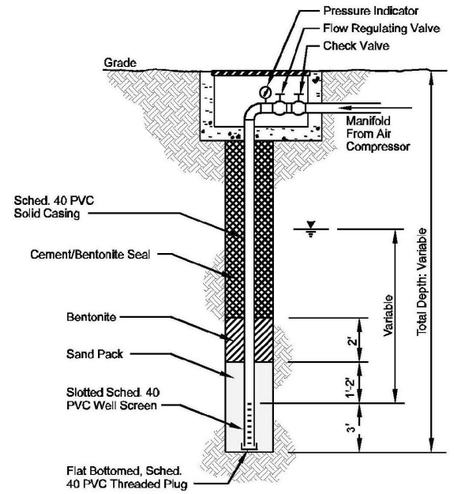
2.4 SOIL VAPOR PROBES

The system includes 11 soil vapor probes (SVPs). SVPs were placed at 20-foot intervals extending perpendicular to the midpoint of the north lateral as shown in Figure 2-1. The probes were installed to depths within the ZOI (see Figure 2-2) that was calculated during completion of the pilot test (Versar 2013b). Soil vapor samples are collected from the SVPs and analyzed for gasoline-range total petroleum hydrocarbons (TPH-G) and benzene, toluene, ethylbenzene, and xylenes (BTEX) to evaluate the effectiveness of the AS/SVE system. Soil vapor pressures are also measured to assess the ZOI of the AS and SVE blowers and confirm the ZOI calculated during pilot testing is still applicable.

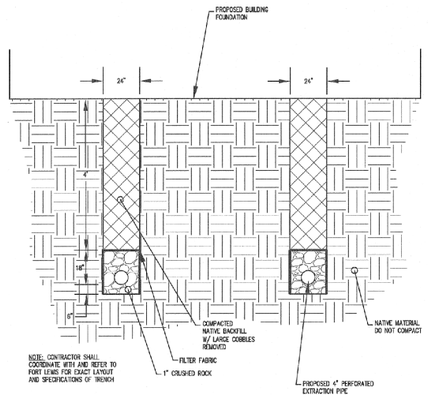
2.5 GROUNDWATER MONITORING WELLS

Eight groundwater monitoring wells are installed at AOC 9-2. The locations of the wells are identified in Figure 2-1. Sampling of groundwater monitoring wells is used to assess the progress of remedial action and overall groundwater quality at AOC 9-2.

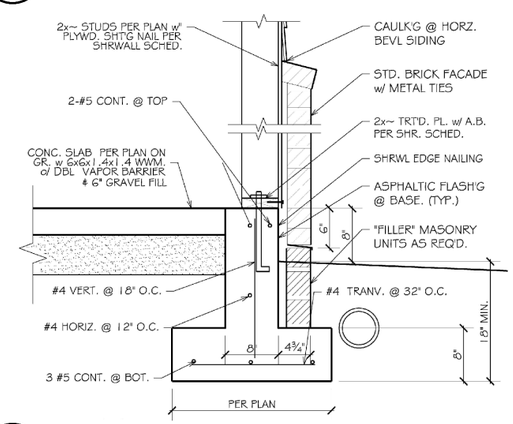
Typical Vertical Air Sparging Well Construction



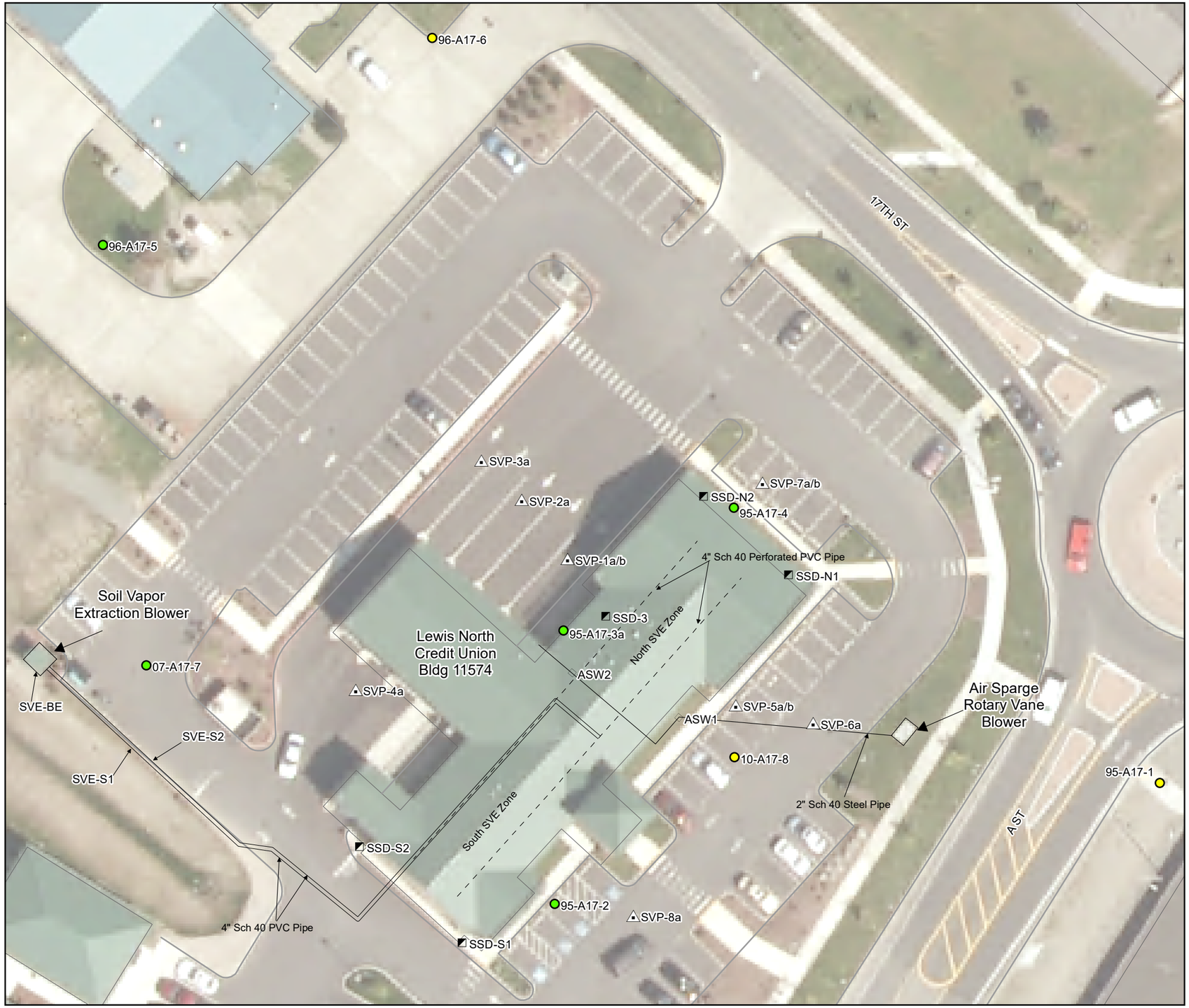
1 Air Sparge Well Construction



2 Vapor Extraction System Trench



3 Typical Footing



Legend

- Soil Vapor Probe
- Vacuum Port
- Air Sparge Well
- Monitoring Well
- Monitoring Well w/Transducer

0 5 10 20 Feet

N

Map Data:
Coordinate System: UTM, Zone 10
Horizontal Datum: WGS 84

USACE | **SEALASKA**

Figure 2-1
AOC 9-2
Air Sparge and Soil Vapor Extraction Layout

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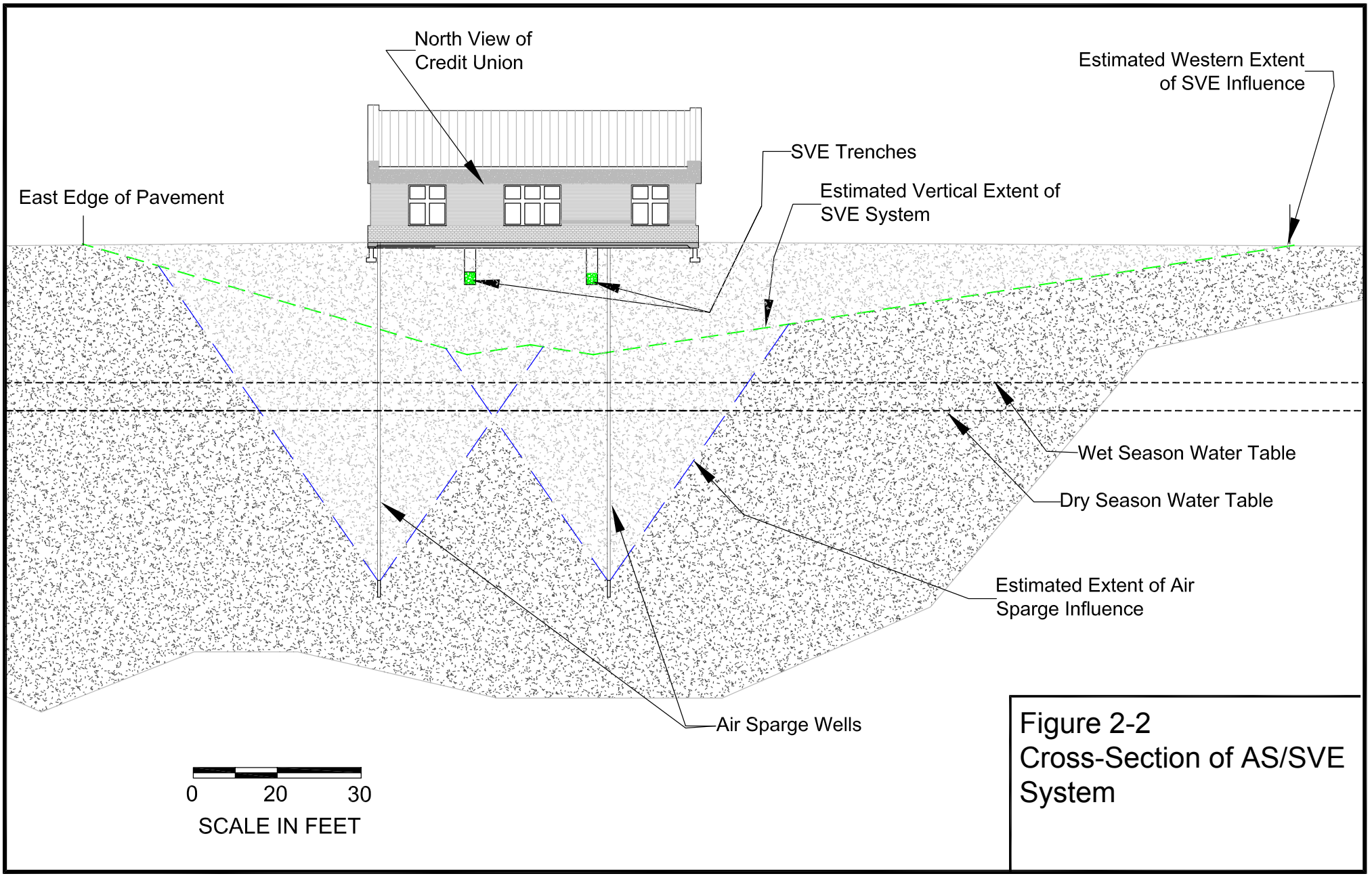


Figure 2-2
Cross-Section of AS/SVE System

3 PERFORMANCE MONITORING AND MAINTENANCE

A description of the required monitoring and maintenance activities is provided in the Final Interim Action Workplan (Versar 2013a).

Routine performance monitoring includes:

- Sampling to observe trends in groundwater and soil vapor concentrations;
- Monitoring SVE and SSD performance;
- Measuring blower ZOIs; and
- Measuring the ability of the system to strip and remove VOCs.

Performance monitoring focuses on:

- Operating the AS/SVE system equipment to allow efficient and effective remediation of contaminants in groundwater and soil at the site;
- Monitoring air flow throughout the system to ensure contaminants in soil vapor are removed and to maintain negative sub-slab pressure to prevent vapor intrusion into the Credit Union building;
- Monitoring operating temperature to prevent damage to system components;
- Confirming that VOCs are being removed by the system;
- Monitoring SVP vacuum for assessment of SVE ZOI; and
- Ensuring emissions from the AS/SVE system are not above Puget Sound Clean Air Agency's (PSCAA) criteria.

All AS/SVE system operations, maintenance, and air monitoring activities were recorded on system log sheets. System log sheets for 2014 and 2015 are provided in Appendix A. Collected field data for 2014 and 2015 along with historical data are provided in Appendix B.

The following sections provide the results of performance monitoring, operation and maintenance activities conducted in 2015.

3.1 AS/SVE SYSTEM INSPECTION AND MAINTENANCE

AS/SVE system inspection and maintenance are conducted to guarantee continued system operation and to remove residual contamination at the site. In 2015, weekly inspection of the

blowers revealed no unusual noises or oil leaks. No leaks were observed in the exposed AS/SVE systems piping or fittings.

On June 4, 2015 the AS compressor failed due to a seized motor shaft. A new GAST 6066-P102 compressor was installed on October 10, 2015. The SVE system operated continuously during 2015.

The AS compressor is designed to discharge air at up 20 pounds per square inch (psi) and 20 cubic feet per minute (cfm). After piping and fitting head losses, the typical operating pressure at well heads is approximately 17 psi. The AS well head pressures were observed to be within expected operating condition. AS well heads and injection lines required no maintenance in 2015.

A granular-activated carbon vessel was connected to the SVE exhaust in July 2015. The vessel contains 200 pounds GAC in a 55-gallon drum. A vent stack, constructed of Schedule 80 PVC, extends from the outlet of the GAC vessel to above the roofline of the SVE shed. Pressure gauges on the GAC inlet and outlet allow for monitoring pressure drop across the absorption media.

3.2 AIR FLOW AND TEMPERATURE MONITORING

Airflow is monitored to ensure that flow through the system is maintained to allow for efficient removal of VOCs. Temperature is monitored to ensure that higher than normal temperatures, that could potentially damage system equipment and infrastructure, are not present.

The normal airflow velocity in the SVE exhaust line is approximately 40 to 50 meters per second. In 2015, the measured airflow velocity of the SVE suction lines were within normal range.

The acceptable temperature at the AS wells (ASW-1 and ASW-2) and in the SVE suction lines is less than 129°F. This corresponds to the lowest temperature where Schedule 40 PVC can distort. All temperatures measured for the AS well heads and SVE suction lines were below this value.

Monitoring data are provided in Appendix B, Table B-1.

3.3 BUILDING AND SUB-SLAB PRESSURE MONITORING

Monitoring SSD system performance is focused on the protection of building occupants and ensuring that negative pressure is continuously maintained. The effectiveness of the SSD

system in mitigating vapor intrusion was assessed by measuring the pressure differentials across the building floor slab.

Sub-slab pressures were measured weekly at five SSD monitoring points (SSD-3, SSD-S1, SSD-S2, SSD-N1, and SSD-N2) utilizing a magnehelic vacuum gauge. Sub-slab differential pressures recorded from the SSD monitoring points fluctuated between 0.01 to 0.04 inches of water, indicating that negative pressures were maintained for the duration of 2015. Monitoring locations are identified in Figure 2-1 with measurement results provided in Table 3-1.

Table 3-1. Differential Pressures at Sub-Slab Depressurization Ports

	Sub-Slab Pressures (inch WC)				
Date	SSD-S1 (Southeast)	SSD-S2 (Southwest)	SSD-N1 (Northeast)	SSD-N2 (Northwest)	SSD-3 (inside)
01/09/2015	0.025	0.025	0.03	0.03	0.01
01/16/2015	0.025	0.025	0.03	0.03	0.01
01/23/2015	0.025	0.025	0.03	0.03	0.01
01/30/2015	0.025	0.025	0.03	0.03	0.01
02/05/2015	0.025	0.025	0.03	0.035	0.01
02/13/2015	0.025	0.025	0.03	0.03	0.01
02/20/2015	0.02	0.02	0.03	0.03	0.015
02/27/2015	0.03	0.03	0.03	0.03	0.01
03/06/2015	0.028	0.02	0.025	0.04	0.015
03/13/2015	0.025	0.03	0.035	0.025	0.015
03/20/2015	0.025	0.025	0.03	0.03	0.01
03/27/2015	0.02	0.055	0.025	0.025	0.015
04/03/2015	0.03	0.04	0.04	0.04	0.01
04/10/2015	0.025	0.025	0.03	0.03	0.01
04/17/2015	0.025	0.025	0.035	0.03	0.01
04/24/2015	0.025	0.025	0.03	0.03	0.01
05/01/2015	0:36	0:36	0:43	0:50	0:14
05/08/2015	0.02	0.015	0.04	0.05	0.02
05/15/2015	0.03	0.04	0.035	0.04	-
05/21/2015	0.02	0.02	0.025	0.025	0.015
05/29/2015	0.02	0.025	0.03	0.035	0.015
06/05/2015	0.02	0.015	0.03	0.03	0.015
06/12/2015	0.02	0.025	0.02	0.03	0.03
06/18/2015	0.02	0.02	0.025	0.025	0.01
06/26/2015	0.02	0.02	0.03	0.035	0.015
07/03/2015	-	-	-	-	-
07/10/2015	0.02	0.03	0.03	0.03	0.015
07/17/2015	0.02	0.02	0.02	0.03	0.01
07/24/2015	0.02	0.02	0.025	0.03	0.01
07/31/2015	0.02	0.02	0.025	0.025	0.01
08/07/2015	0.02	0.02	0.02	0.025	0.01
08/14/2015	0.05	0.035	0.035	0.035	0.01
08/21/2015	0.025	0.02	0.015	0.03	0.01
08/28/2015	0.025	0.025	0.028	0.02	0.015

Table 3-1. Differential Pressures at Sub-Slab Depressurization Ports (continued)

	Sub-Slab Pressures (inch WC)				
Date	**SSD-S1 (Southeast)**	**SSD-S2 (Southwest)**	**SSD-N1 (Northeast)**	**SSD-N2 (Northwest)**	**SSD-3 (inside)**
09/04/2015	0.02	0.02	0.025	0.02	0.01
09/11/2015	0.025	0.02	0.04	0.03	0.015
09/18/2015	0.02	0.025	0.03	0.025	0.015
09/25/2015	0.01	0.02	0.025	0.03	0.015
10/02/2015	-	-	-	-	-
10/09/2015	0.025	0.02	0.02	0.02	0.01
10/16/2015	0.02	0.02	0.02	0.02	0.01
10/19/2015	-	-	-	-	-
10/23/2015	0.02	0.02	0.03	0.02	0.015
10/30/2015	0.03	0.03	0.03	0.035	0.01
11/06/2015	0.03	0.025	0.02	0.02	0.01
11/13/2015	0.03	0.03	0.03	0.03	0.015
11/20/2015	-	-	-	-	-
11/27/2015	0.015	0.015	0.015	0.015	0.01
12/02/2015	0.025	0.025	0.038	0.037	0.015
12/10/2015	0.015	0.012	0.02	0.018	0.015
12/18/2015	0.015	0.015	0.02	0.015	0.01
12/24/2015	0.025	0.02	0.02	0.02	0.015
12/31/2015	0.01	0.015	0.015	0.015	0.01
AVG SSD	**0.02**	**0.02**	**0.03**	**0.03**	**0.01**

Notes:
Differential pressures were obtained using magnehelic gauge.
- No data, not applicable
WC – Water column

Historical data indicate negative pressure was maintained beneath the building since system startup in 2012. Historical monitoring data are provided in Appendix B, Tables B-1 and B-2.

During operation, water occasionally accumulates in the sub-slab ports, especially SSD-S1 and SSD-S2 on the south side of Credit Union building at AOC 9-2. It is presumed that water vapor and liquid condense and collect on the sub-slab vapor barrier and flow to the low areas under the building, such as the sub-slab monitoring ports. The occasional small amount of water (< 500 mL) is pumped out by drill pump prior to measurement of sub-slab vacuum pressures.

3.4 AS/SVE SYSTEM EXHAUST MONITORING

Weekly monitoring of SVE exhaust was conducted using a photoionization detector (PID). Semi-annual SVE exhaust samples were collected using Tedlar bags on March 11, 2015, June 18, 2015, September 29, 2015, and December 28, 2015. During each event, Tedlar bag samples were collected from the bulk air stream at the center of the SVE blower exhaust pipe at four, equally-spaced intervals over an 8-hour period.

3.4.1 Results of PID Screening of SVE Exhaust

Appendix B, Table B-1 contains a table of field data including results of weekly PID measurements of VOC concentrations at the SVE exhaust. Figure 3-1 shows results of weekly screening of SVE exhaust by PID. The plot of PID readings shows a significant downward trend in VOC concentrations since startup of the AS compressor in 2012. The PID detected a spike in VOC concentrations in late 2015 after replacement and startup of the AS blower.

3.4.2 Results of Tedlar Bag Sampling of SVE Exhaust

Concentrations of TPH-G and benzene were non-detect during the March 2015 sampling event. Concentrations significantly increased in June 2015, reaching a maximum concentration of TPH-G at 7,500 micrograms per cubic meter ($\mu g/m^3$) and benzene at 3.3 $\mu g/m^3$ during the period when the AS blower was offline. TPH-G and BTEX concentrations continued to decline in the December 2015 SVE exhaust sampling event after startup of the new AS blower in October 2015.

Results of SVE exhaust sampling by Tedlar bag are provided in Table 3-2 and on Figures 3-2 and 3-3.

Figure 3-1.
Weekly VOC Concentrations at SVE Blower Exhaust,
May 2012 through December 2015

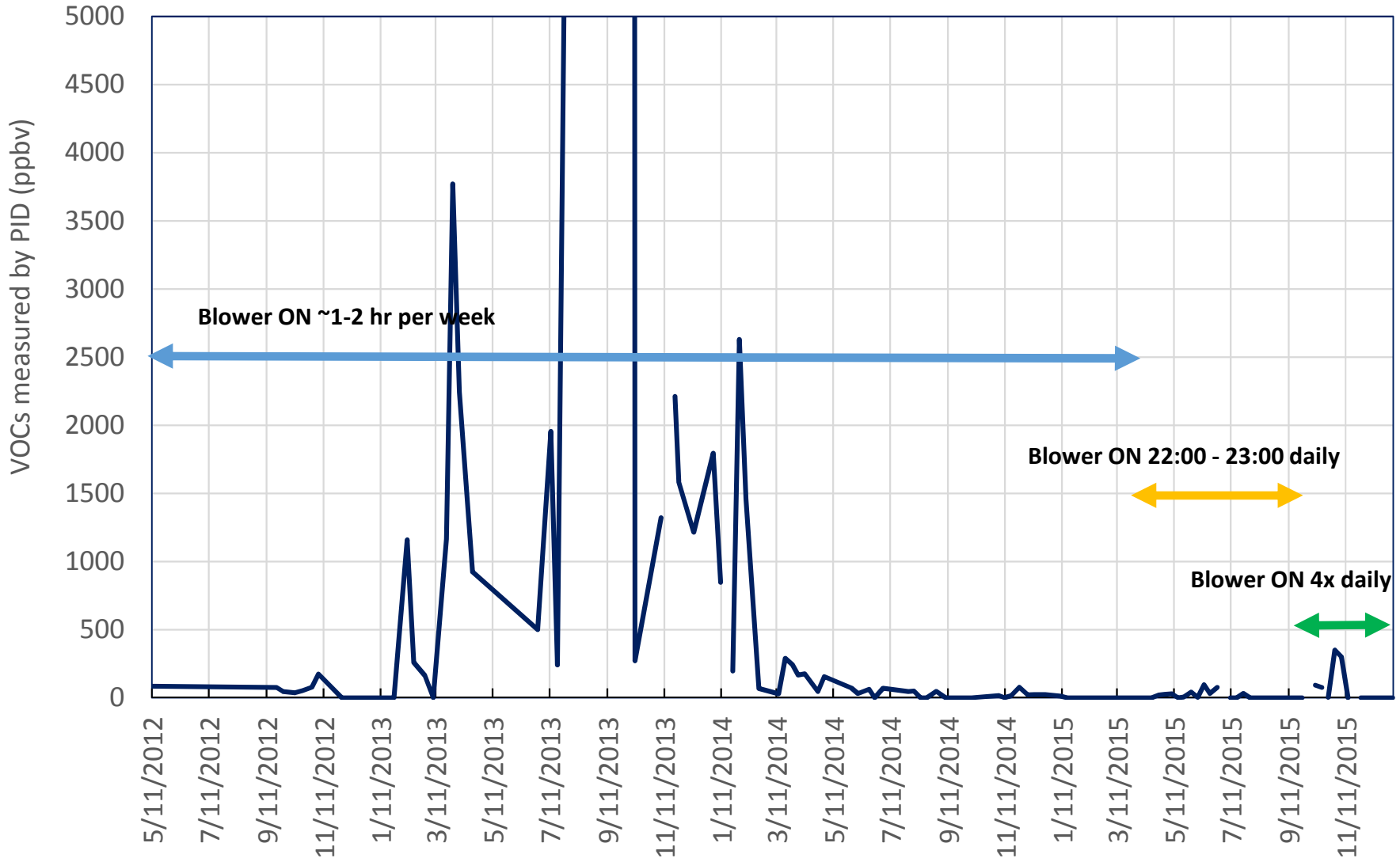


Table 3-2. 2015 Results of SVE Exhaust Tedlar Bag Samples

Date	Sample ID	TPH-G (ppbv)	TPH-G (µg/m^3)	Benzene (µg/m^3)	Toluene (µg/m^3)	Ethyl Benzene (µg/m^3)	m,p Xylene (µg/m^3)	o-Xylene (µg/m^3)	Total Xylenes (µg/m^3)[1/]
03/11/2015	AOC9-2-150311SVE-1000	ND	ND	ND	4.6	ND	5.0	1.5	6.5
	AOC9-2-150311SVE-1300	ND	ND	ND	5.3	1.3	6.3	1.8	8.1
	AOC9-2-150311SVE-1530	ND	ND	ND	3.9	ND	4.9	1.7	6.6
	AOC9-2-150311SVE-1800	ND	ND	ND	7.7	6.0	4.9	2.1	7.0
	AOC9-2-150311SVE DUP	ND	ND	ND	5.0	1.9	6.1	3.0	9.1
06/18/2015	AOC9-2-150618SVE-1000	1834	7500	3.2	17	ND	5.2	ND	5.2
	AOC9-2-150618SVE-1300	1540	6300	3.0	16	ND	4.9	ND	4.9
	AOC9-2-150618SVE-1530	1687	6900	3.3	12	ND	ND	ND	ND
	AOC9-2-150618SVE-1800	1663	6800	3.2	12	ND	2.3	ND	2.3
	AOC9-2-150618SVE DUP	1785	7300	2.8	13	ND	2.3	ND	2.3
09/29/2015	AOC9-2-150929SVE-1000	81	330	1.4	11	2.3	10	3.7	14
	AOC9-2-150929SVE-1300	240	980	1.5	18	4.3	4.7	4.4	9.1
	AOC9-2-150929SVE-1530	391	1600	0.6	11	1.7	2.4	0.9	3.3
	AOC9-2-150929SVE-1800	391	1600	0.5	13	1.3	1.6	ND	1.6
12/28/2015	AOC9-2-151228SVE-1000	149	610	ND	3.0	ND	0.7	ND	0.7
	AOC9-2-151228SVE-1300	200	820	ND	2.7	ND	0.8	ND	0.8
	AOC9-2-151228SVE-1530	245	1000	ND	2.9	ND	0.9	ND	0.9
	AOC9-2-151228SVE-1800	181	740	ND	2.5	ND	ND	ND	ND

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
ppbv – parts per billion by volume
µg/m^3 – micrograms per cubic meter
ND – Not Detected

Figure 3-2. SVE Exhaust - Tedlar Bag Samples: TPH-G (µg/m³)

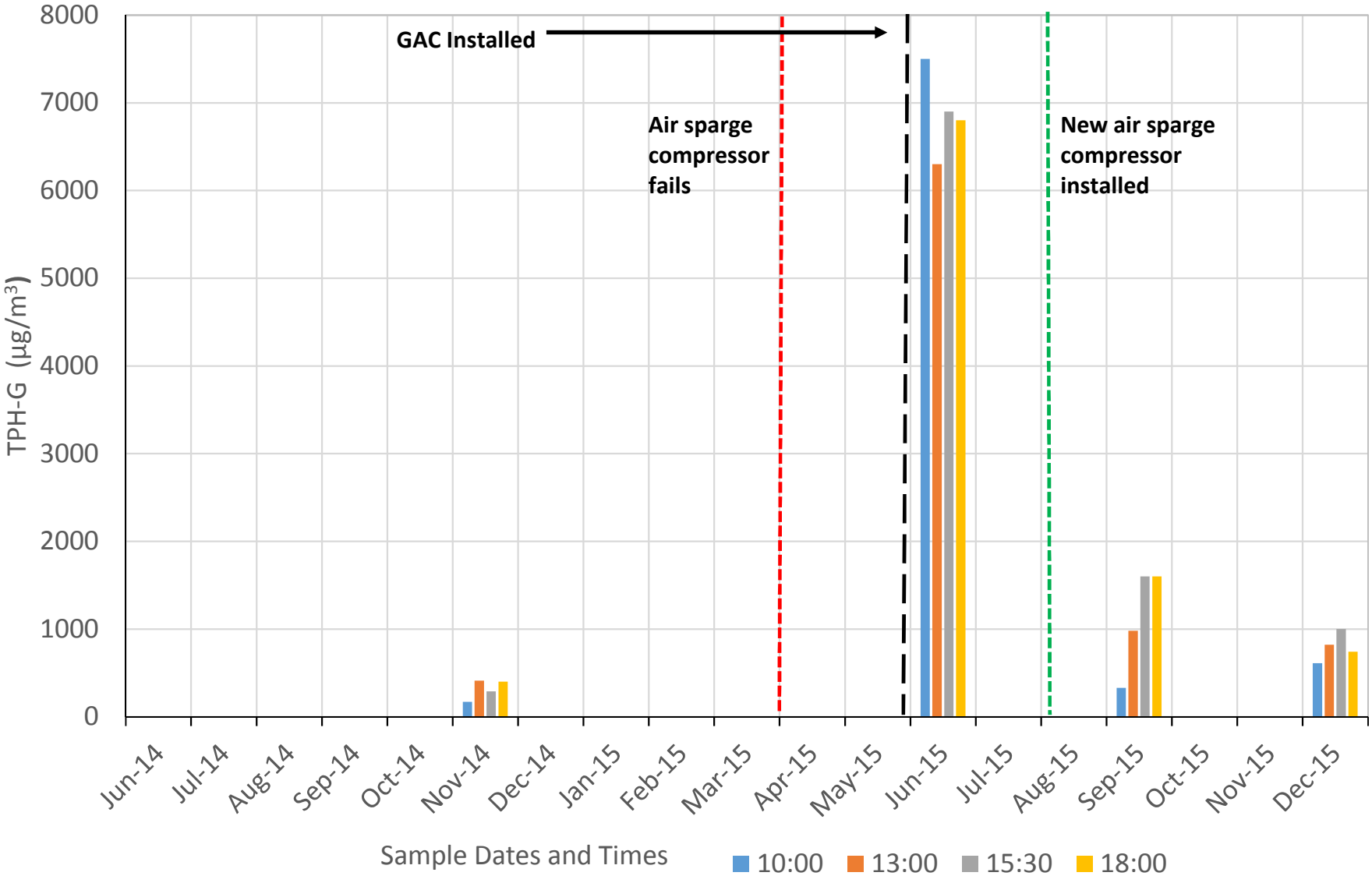
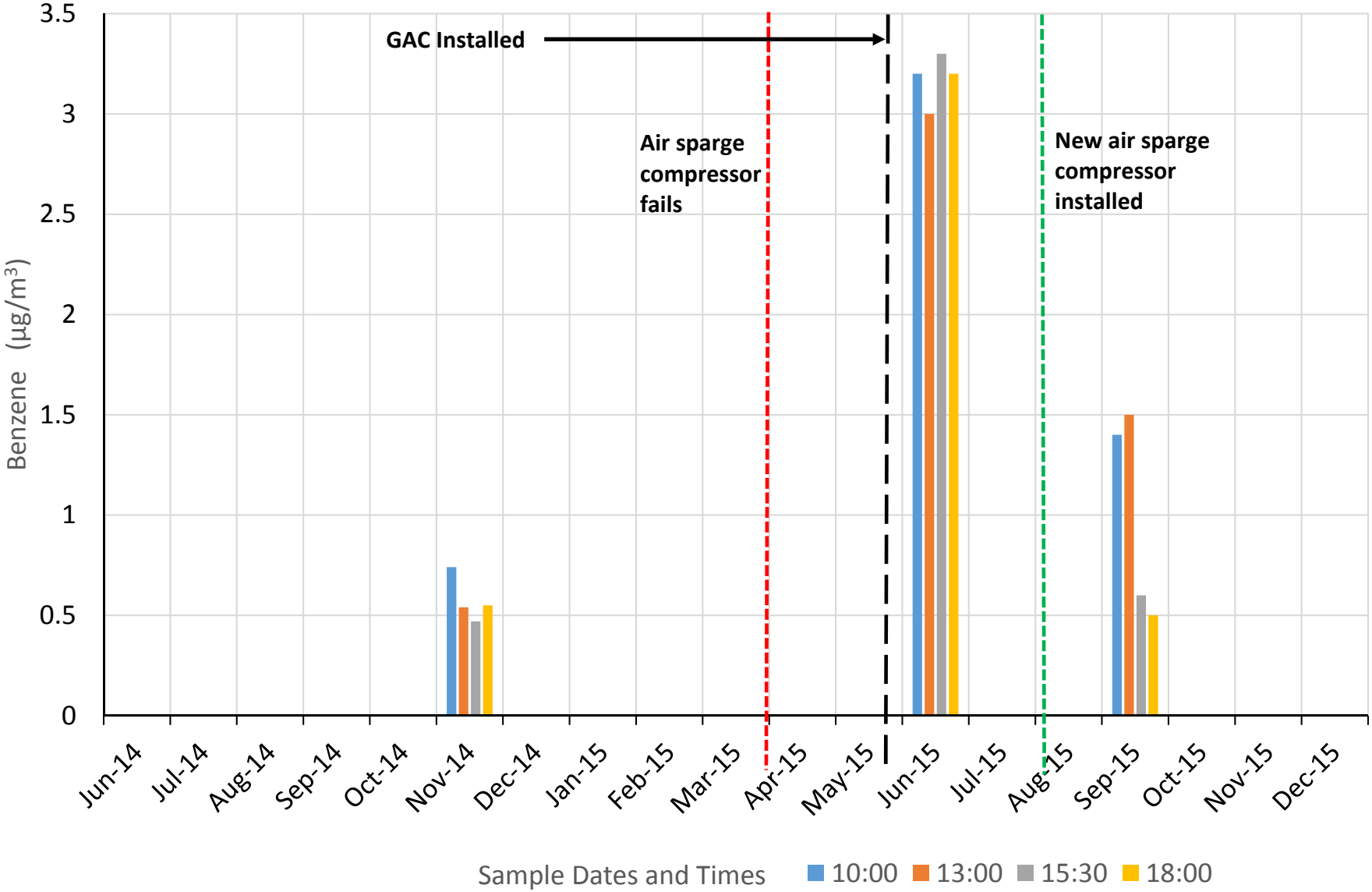


Figure 3-3. SVE Exhaust - Tedlar Bag Samples: Benzene (µg/m³)



3.4.3 Calculation of Air Emissions

Vapor samples from the AS/SVE system exhaust are collected by Tedlar bag to:

- Analyze long-term system performance, and
- Verify the system is compliant with the PSCAA total maximum allowable emission limit of:
  - 15 pounds of benzene per year for an unpermitted water treatment facility related to soil and groundwater remediation projects (PSCAA 2015, Section 6.03(c)(94))
  - 50,000 pounds of VOCs per year for an unpermitted facility (PSCAA 2015, Section 5.03(a)(3)(C)).

TPH-G and benzene concentrations from the sampling event with the highest concentrations (June 18, 2015) were used to assess the total estimated emissions for 2015. These calculations represent a worst case scenario.

Maximum concentration of TPH-G was 7,500 µg/m^3 on June 18, 2015. Assuming continuous hourly emissions with a maximum blower flow rate of 476 m^3/hr:

(a) $7{,}500\ \frac{\mu g}{m^3} \times 476 \frac{m^3}{hr} = 3{,}570{,}000\ \frac{\mu g}{hr}$

(b) $3{,}570{,}000\ \frac{\mu g}{hr} \times 8760 \frac{hrs}{year} \times 10^{-6} \frac{g}{\mu g} \times\ 0.0022 \frac{lbs}{g} = \mathbf{688}\ \frac{\boldsymbol{lbs}}{\boldsymbol{year}}\ \boldsymbol{TPH-G}$

Total VOC emissions as TPH-G are estimated to be below 690 pounds per year, which is well below the 50,000 pounds per year PSCAA criteria.

The highest concentration of benzene during this peak concentration event was 3.3 µg/m^3 with a maximum blower flow rate (per the manufacturer's specifications) of 476 cubic meters per hour (m^3/hr):

(a) $3.3\ \frac{\mu g}{m^3} \times 476 \frac{m^3}{hr} = 1{,}571\ \frac{\mu g}{hr}$

(b) $1{,}571\ \frac{\mu g}{hr} \times 8760 \frac{hrs}{year} \times 10^{-6} \frac{g}{\mu g} \times\ 0.0022 \frac{lbs}{g} = \mathbf{0.30} \frac{\boldsymbol{lbs}}{\boldsymbol{year}}\ \boldsymbol{benzene}$

Extrapolation of the worst case concentrations result in total annual benzene emissions of 0.30 pounds per year, well below the 15 pounds per year PSCAA criteria.

As noted previously, weekly monitoring of SVE exhaust was performed using a PID. Figure 3-1 shows a plot of the weekly PID values versus time. The PID monitoring has

indicated a general downward trend in VOC concentrations. However, the downward trend could be attributed to the sample time not corresponding to the vapor migration time through the SVE system resulting from pulsing of the AS system. The AS blower cycles have been included on Figure 3-1.

The quarterly data collected using Tedlar bags is more useful in evaluating concentration trends in the SVE exhaust. Tedlar bag sampling data provides a greater range of analyte concentrations (individual VOCs of concern and TPH-G), which is useful in assessing more accurately what contaminants of concern remain in the air stream. The data is also useful as an indication of the effectiveness of the AS/SVE system and success of the remedial action, especially related to a specific contaminant of concern.

3.5 SOIL VAPOR PROBE MONITORING

Annual monitoring of SVPs was performed to assess the effectiveness of air sparging and soil vapor extraction. SVP pressures were measured using a magnehelic gauge, configured to measure the difference between atmospheric and subsurface pressures. The SVE blower remains in continuous operation during SVP sampling. The programmed intermittent AS blower operations (four, 30 minute cycles per day) remained unchanged in the months prior to the SVP monitoring event. On June 4, 2015, the AS compressor malfunctioned, so it was off during the SVP sampling event.

Differential pressure measurements were collected from each SVP to assess the ZOI of the SVE system.

During sampling, vacuum pressure was measured at each soil vapor probe locations (see Figure 2-1). A peristaltic pump was used to draw the soil vapor from each SVP. A PID was used for field readings for VOC concentrations in the vapor. The probe was purged of soil gas until PID readings from the peristaltic pump exhaust stabilized. The Tedlar bag was then filled, purged of one volume, and refilled for the sample. Tedlar bag samples were submitted to Eurofins-Air Toxics laboratory for analysis for TPH-G and BTEX by Method TO-15.

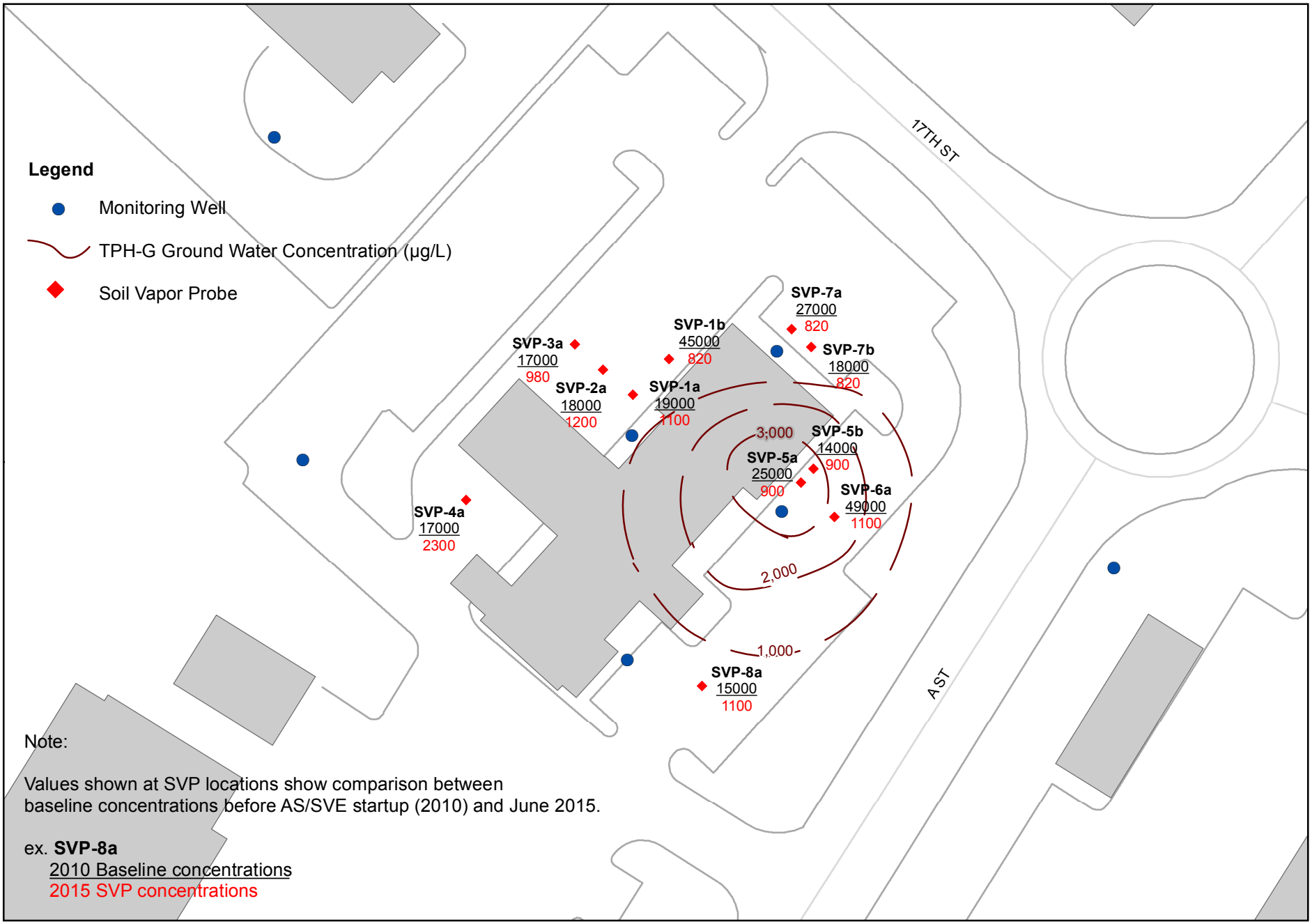
Table 3-3 presents the 2015 analytical results for soil vapor samples for TPH-G and BTEX. The TPH-G results for 2010 and 2015 are both shown on Figure 3-4 as a comparison. Soil vapor concentrations show general homogeneity across the remediation area possibly indicating the effects of air sparging and migration of VOCs toward the SVE extraction laterals. Vapor concentrations in 2015 showed a decreased of over an order of magnitude versus the 2010 baseline concentrations.

Table 3-3. 2015 Soil Vapor Concentrations

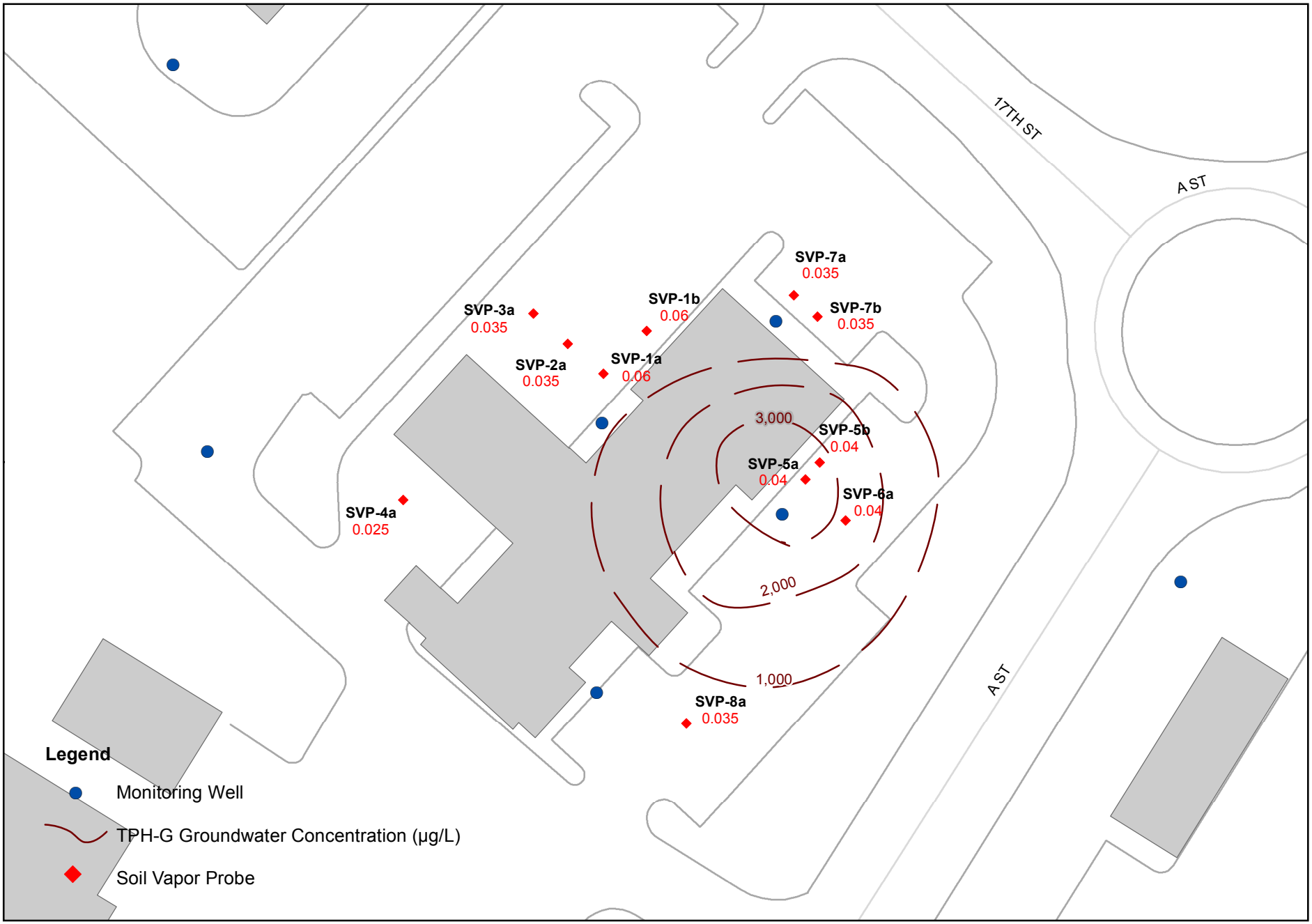
Sample ID	TPH-G (µg/m³)	Benzene (µg/m³)		Toluene (µg/m³)	Ethyl Benzene (µg/m³)	m,p Xylene (µg/m³)	o-Xylene (µg/m³)	Total Xylenes (µg/m³)[1/]
AOC92150604SVP1A	1100	6		140	21	85	25	110
AOC92150604SVP1B	820	20		130	19	81	24	105
AOC92150604SVP2A	1200	4		96	18	75	24	99
AOC92150604SVP3A	980	2	J	95	15	64	19	83
AOC92150604SVP4A	2300	4	J	87	11	43	15	58
AOC92150604SVP5A	900	1	J	67	15	62	21	83
AOC92150604SVP5B	900	2		58	13	58	19	77
AOC92150604SVP6A	1100	2	J	80	19	83	30	113
AOC92150604SVP7A	820	12		52	12	51	19	70
AOC92150604SVP7B	820	1	J	52	13	58	22	80
AOC92150604SVP8A	1100	3	J	90	19	84	30	114

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
µg/m³ – micrograms per cubic meter
J – Estimated value

Figure 3-5 illustrates differential pressures measured at the 11 SVPs. As was noted during the Pilot Study (Versar 2013b) and 2015 SVP monitoring events, negative differential pressures were observed at all SVPs. Differential pressures ranged from 0.06 inches of water in SVP-1, nearest the building, to 0.025 inches of water at SVP-4a farthest from the source area. The negative differential pressures indicate that the SVE is exerting a vacuum under the Credit Union building and across the parking lot. The valves on the two SVE zones are set to exert greater vacuum under the north side of the Credit Union building near the source area. SVP-3a, the most distant probe from the building indicated a negative differential pressure of 0.035 inches of water. As with previous SVP monitoring events, the 2015 survey indicated a SVE ZOI that includes all SVPs, an area that extends at least 60 feet west and 40 feet east of the building exterior.



Path: E:\Users\JBLM\TO 01A\Credit Union\O&M Report - 2015\Maps\SVE_Fig_4-4_SVP_2015.mxd
Date: 7/21/2016



N

0 12.5 25 50

Feet

Map Data:
Coordinate System: UTM, Zone 10
Horizontal Datum: WGS 84

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Figure 3-5
Differential Pressure Readings (inches of water)
June 2015

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Date: 7/21/2016

4 GROUNDWATER MONITORING

This section provides a summary of the semi-annual groundwater monitoring that is conducted at the AOC 9-2 site. All wells are sampled semi-annually except well 95-A17-4 which is sampled annually during the wet season (spring). The locations of groundwater monitoring wells are shown in Figure 4-1. Data collected during groundwater monitoring is used to:

- Assess possible mounding in the groundwater table and plume mobilization caused by the AS system; and
- Assess the success of the implemented remedial action at the site.

Depth to water and field parameter measurements collected in 2015 and historically are provided in Appendix C, Table C-1. Current and historical groundwater analytical results for TPH-G and BTEX concentrations is provided in Appendix C, Table C-2.

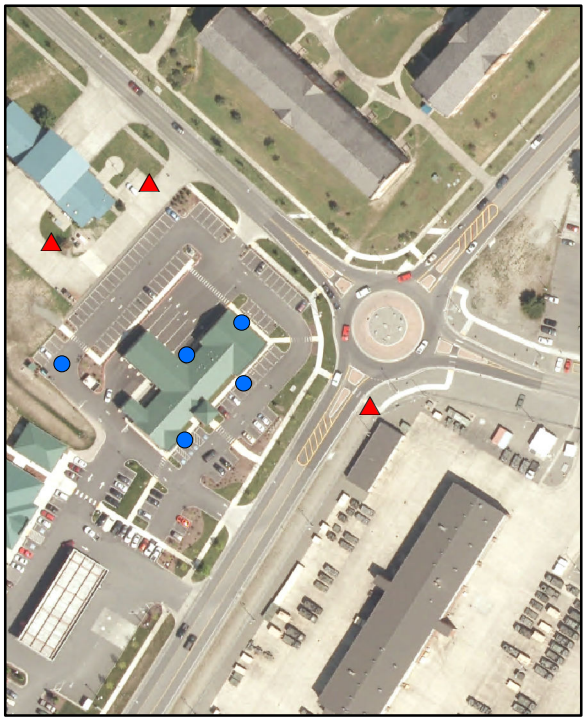
Detailed information regarding the groundwater sampling and results can be found in the Fort Lewis Agreed Order Groundwater Monitoring Report (Sealaska 2016).

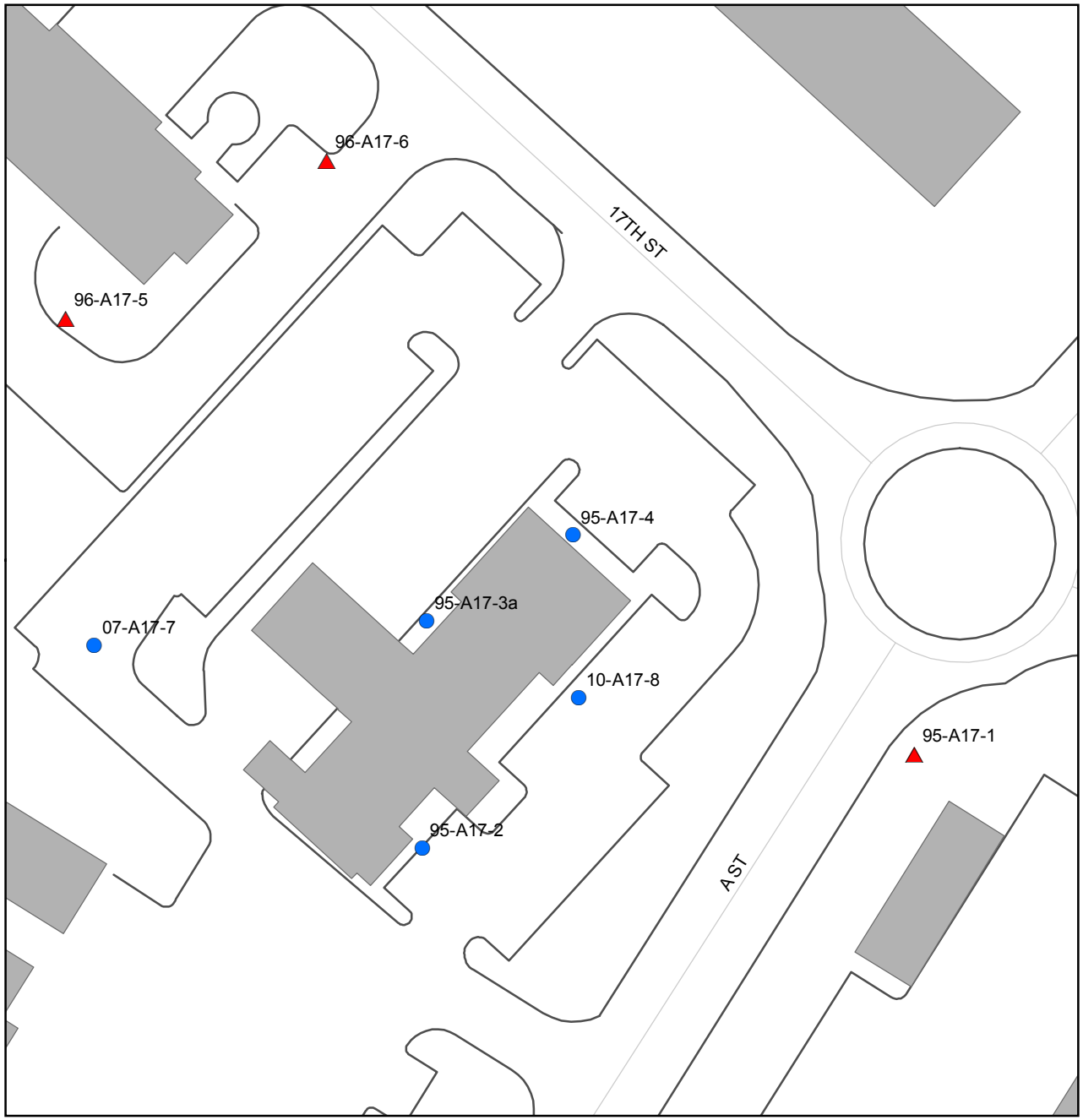
4.1 WATER LEVEL MONITORING

Groundwater level plots from the April and September 2015 sampling events are presented on Figures 4-2 and 4-3, respectively.

Pressure transducers with associated data loggers installed in monitoring wells 95-A17-2, 95-A17-3A, 95-A17-4, 96-A17-5, and 07-A17-7 were also retrieved to download water level data. Review of water level data from the data loggers allowed for definition of duration of the AS cycle and its effect on the normal static water levels.

Figure 4-4 shows the 2015 water levels downloaded from the data loggers in the five monitoring wells. On the figure, the period between roughly January 15 and April 15 represents normal AS system operation. No data was collected between April 15 and approximately July 20 because of a programming error. For the period between June 20 and mid-October, the AS blower was offline for replacement. Because of this, the water level for this period shows only minor change between reading when compared to the period of operation between January and April. Once the AS system as back online in mid-October, the more extreme changes in water level reading are again observed.





Notes:

Wet season depth to water measured and samples collected typically during February or March.

Dry season depth to water measured and samples collected typically during August or September.

95-A17-4 sampled during wet season only.

Legend

- Monitoring Well - Depth to Water Measurement and Sample
- Monitoring Well - Depth to Water Measurement

N

0 12.5 25 50

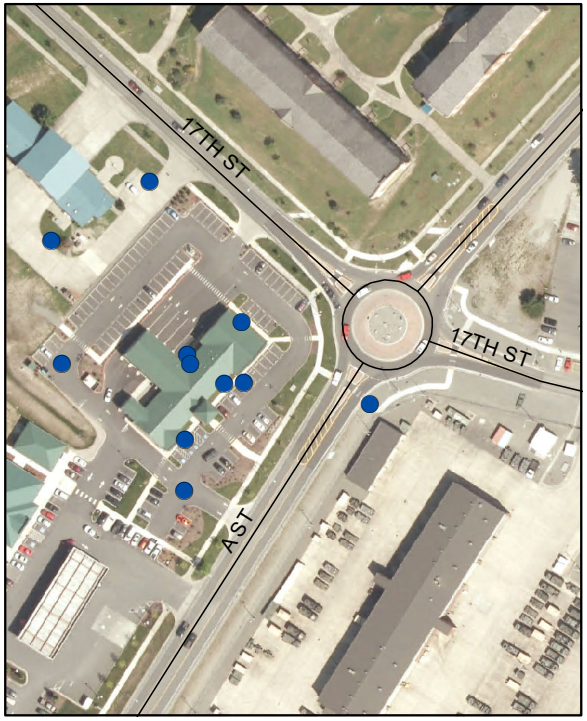
Feet

USACE

SEALASKA

Figure 4-1
Groundwater Monitoring Locations

Path: E:\Users\JBLM\TO 01A\Credit Union\O&M Report - 2015\Maps\SVE_Fig_4-1_GWM_loc.mxd
Date: 7/21/2016



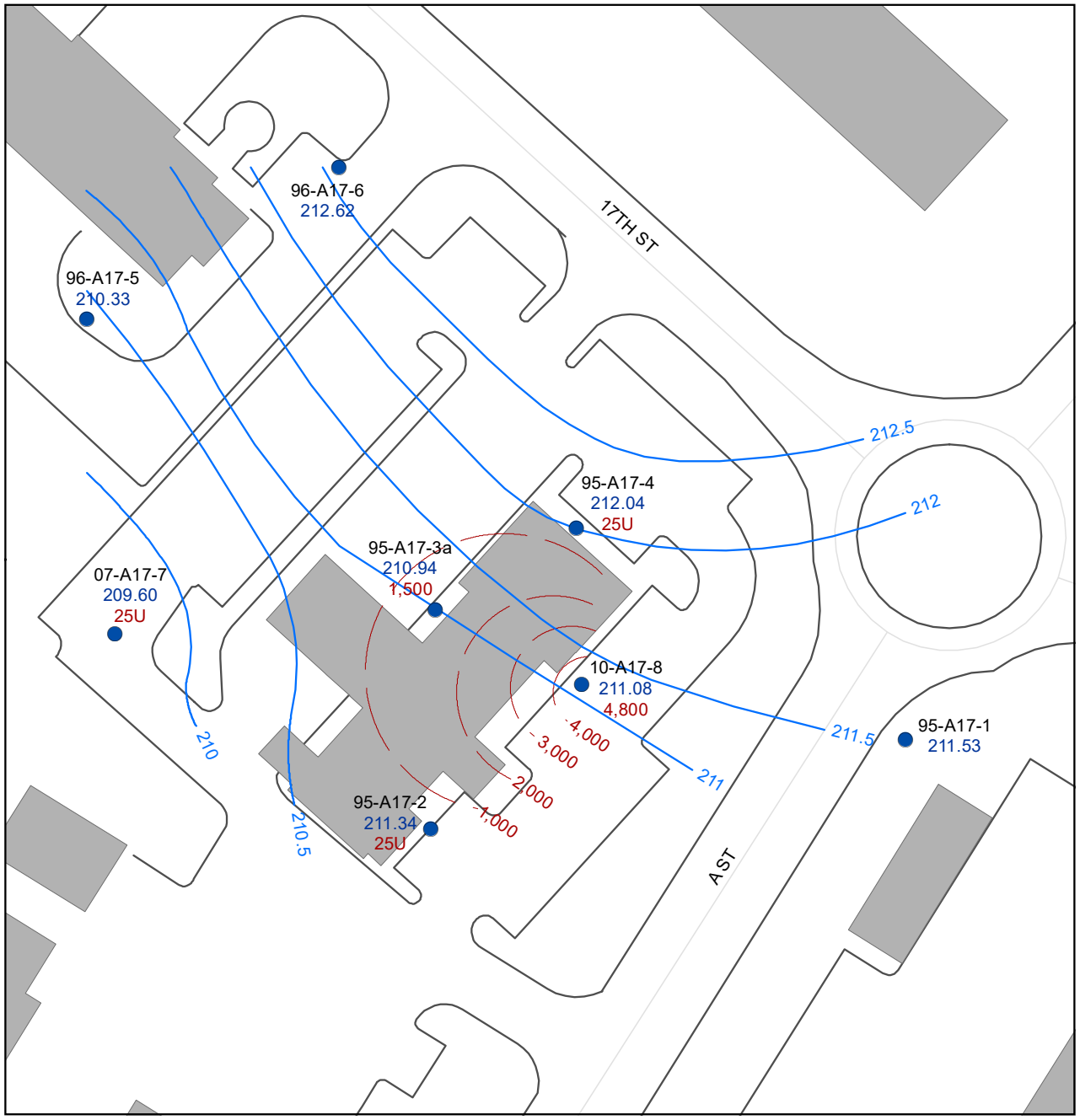
Notes:

Depth to water measurements collected April 21, 2015.

Groundwater samples collected April 22-23, 2015.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-G Concentraion (µg/L)



0 15 30 60
Feet

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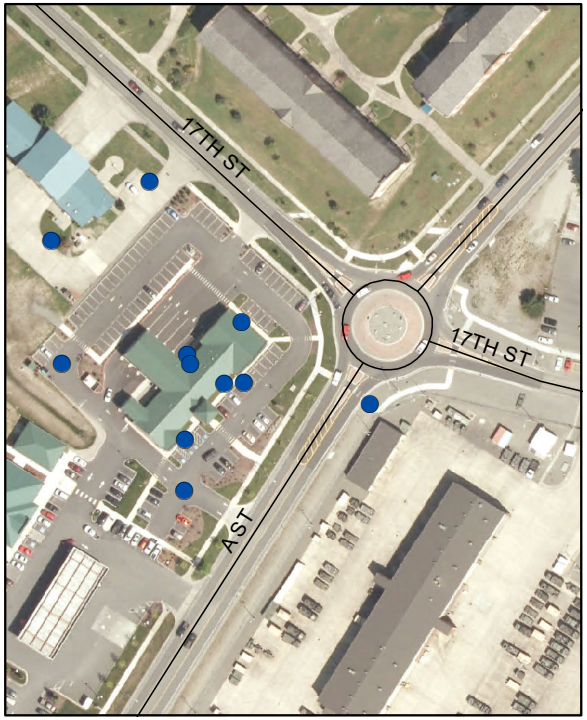
Figure 4-2
Groundwater Elevation and TPH-G Concentration Contours April 2015

Path: P:\Production\Fig\JBLM\TO 01A\FLAO\FLAO 2015 Annual GW Report\Maps\FLAO_2015_AnnualGW_FIG_3-7.mxd
Date: 5/16/2016



Notes:

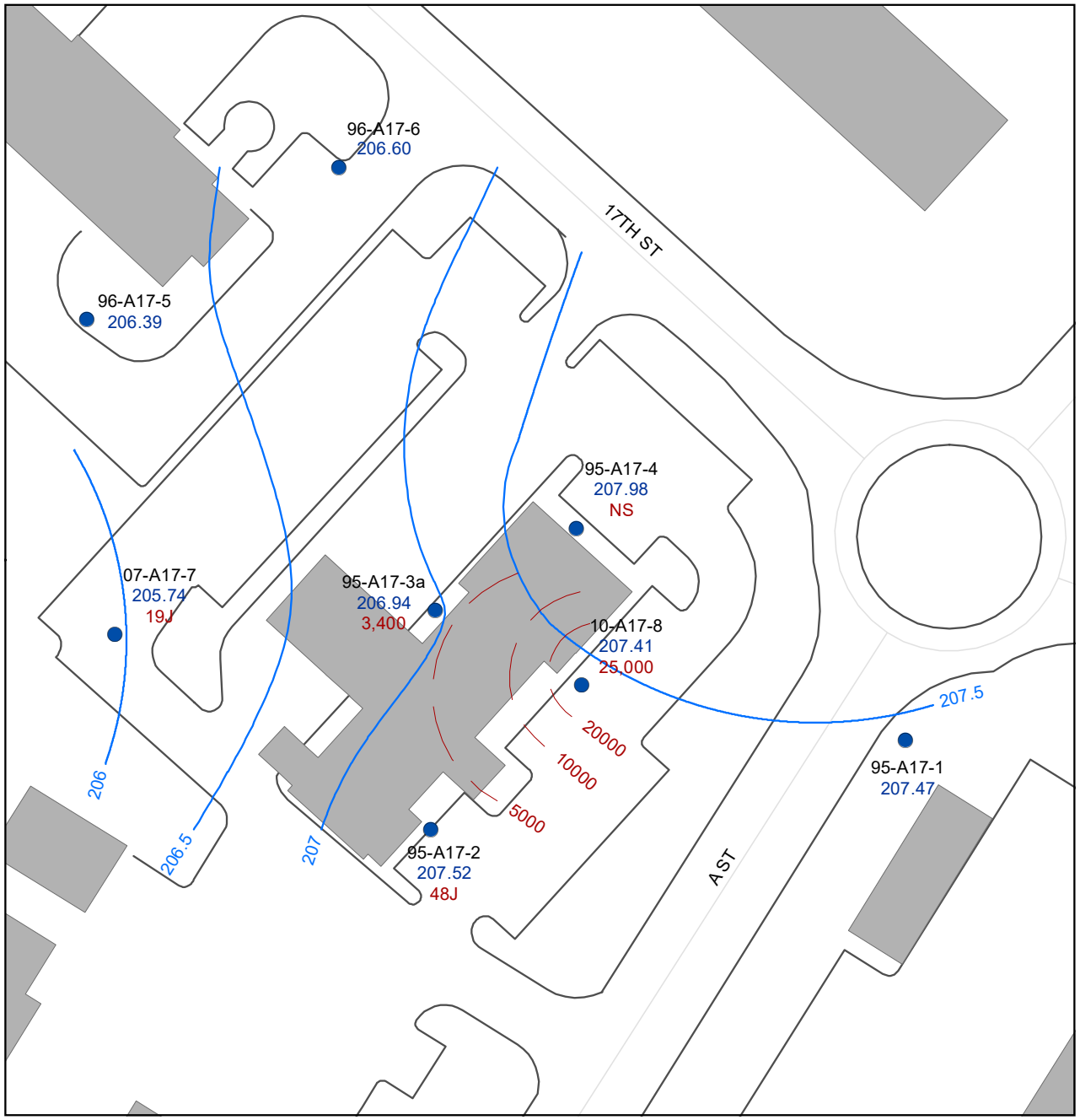
Depth to water measurements collected September 1, 2015.

Groundwater samples collected September 1-2, 2015.

NS - Not planned for sampling.

Legend

- Monitoring Well
- Groundwater Elevation (famsl)
- TPH-G Concentraion (µg/L)



N

0 15 30 60

Feet

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Figure 4-3
Groundwater Elevation and TPH-G Concentration Contours September 2015

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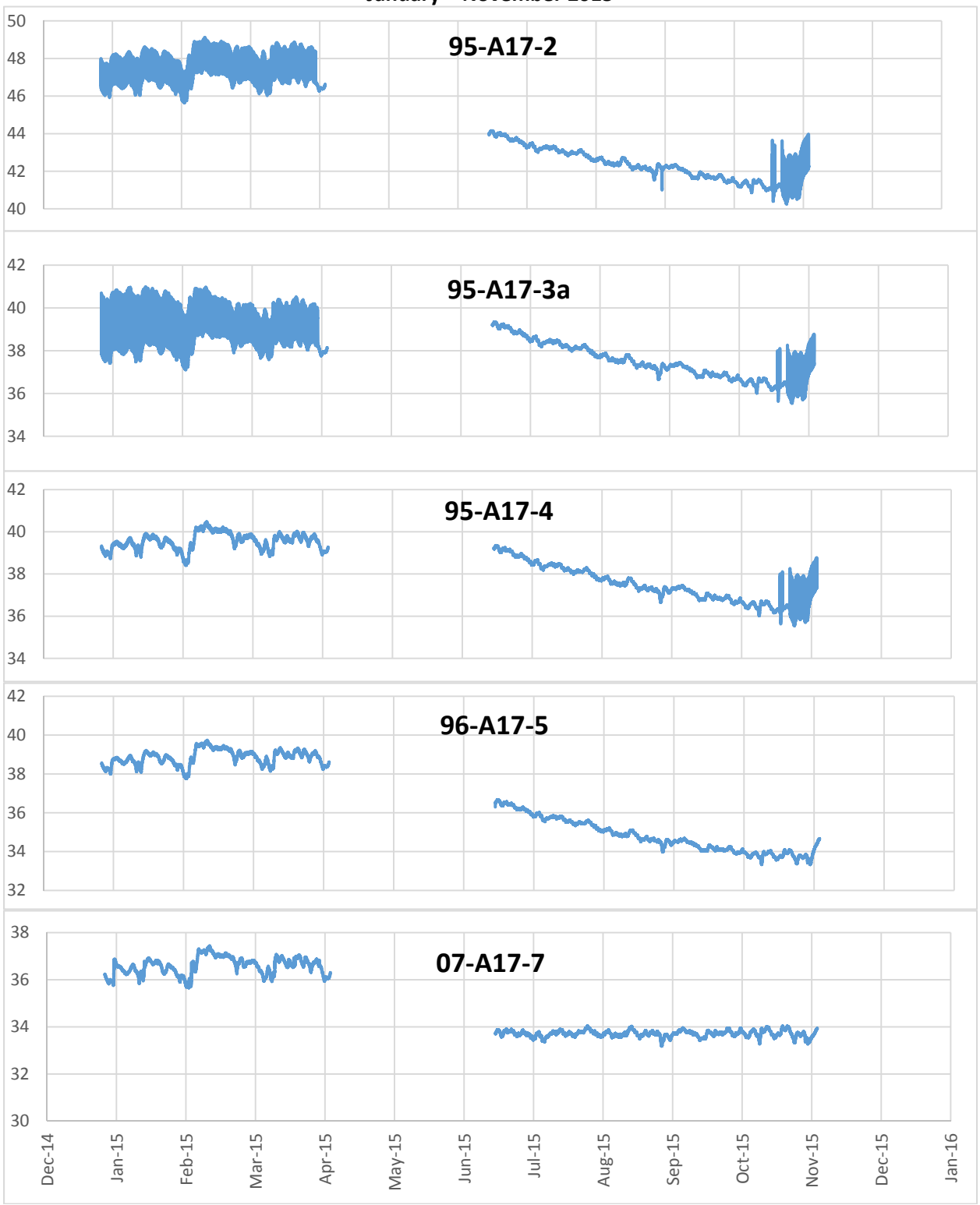
Date: 5/16/2016

Figure 4-4
Water Level (ft) Measured by Solinst Level Logger
January – November 2015



The AS blower operates for 30 minutes four times a day (0600, 1200, 1800, and 0000). Mounding effects caused by air sparging were observed at monitoring wells 95-A17-2, 95-A17-3A, and 95-A17-4 with water levels rising approximately 2 feet. After the blower turns off, groundwater levels return to static levels. A "close-up" of the water level data showing the water level rise and return to static conditions is provided in Figure 4-5. Mounding effects were not observed at or beyond the site perimeter. Mounding effects were negligible at perimeter monitoring wells 96-A17-5 and 07-A17-7 indicating low potential for plume mobilization and high effectiveness at the impact area.

4.2 GROUNDWATER ANALYTICAL RESULTS

The TPH-G concentration iso-contour lines for the April and September sampling events are presented on Figures 4-2 and 4-3 respectively. Appendix C, Table C-2 presents TPH-G and BTEX analytical results and a comparison to Ecology's MTCA Method A cleanup levels for groundwater.

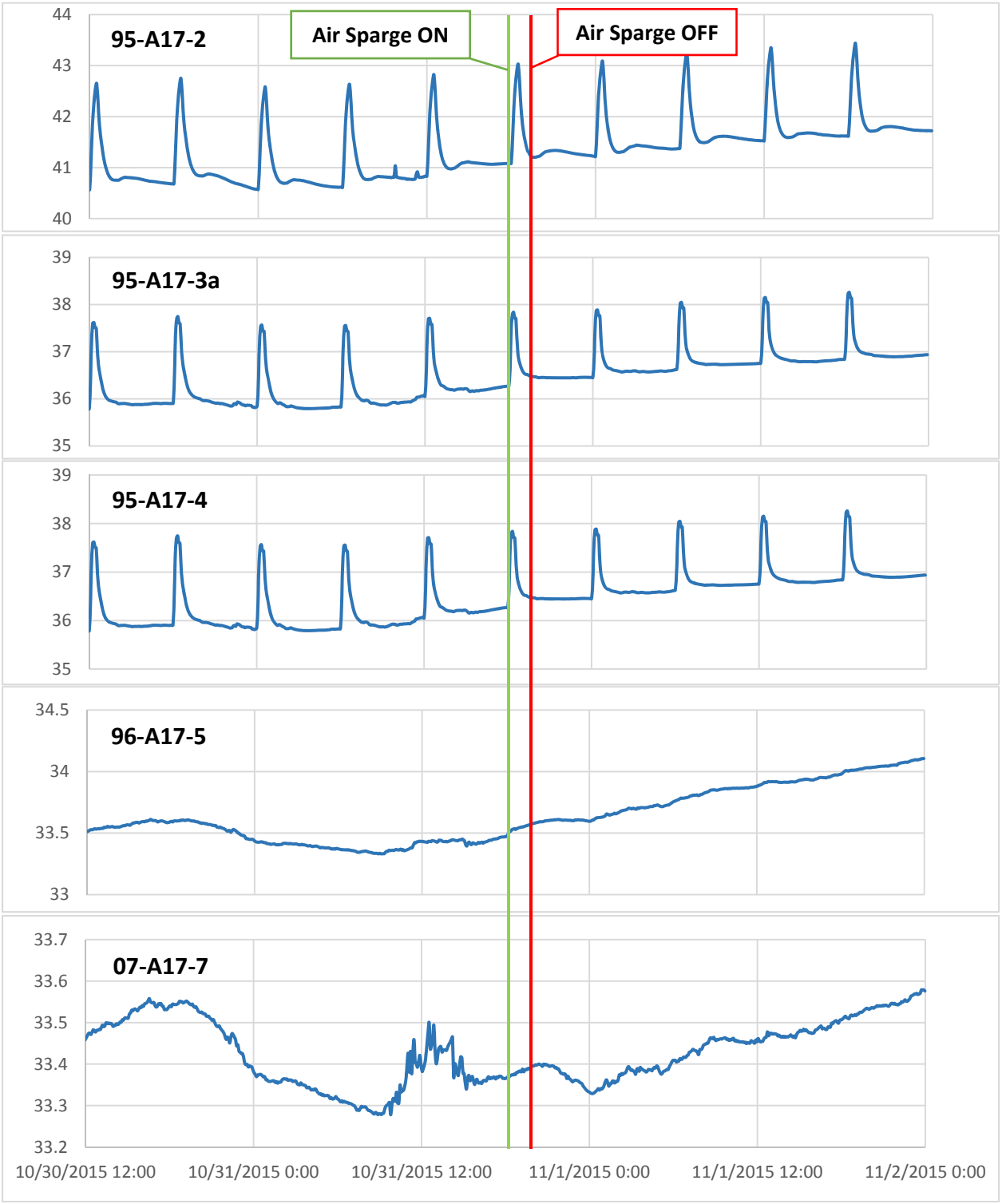
Historically, 95-A17-3A has been considered at or near the source area since it had the highest detected concentrations of TPH-G at 35,000 micrograms per liter (µg/L) in March 2008. In April and September 2015, TPH-G was detected in samples collected from well 95-A17-3A at 1,500 µg/L and 3,400 µg/L.

In October 2010, monitoring well 10-A17-8 was completed within the boundary of the historical UST excavation and within the calculated ZOI of the AS-1 (Versar 2013b). The highest TPH-G concentrations in well 10-A17-8 was 74,000 µg/L in November 2011. In April and September 2015, concentrations of TPH-G at well 10-A17-8 were detected at 4,800 µg/L and 25,000 µg/L, respectively. A duplicate sample was collected during both the April and September sampling events from well 10-A17-8. Sample results were consistent with the primary samples (5,000 µg/L in April and 24,000 µg/L in September).

Monitoring well 10-A17-8 showed a spike in concentration for TPH-G, toluene, ethylbenzene, and total xylenes for the September 2015 monitoring event when compared to the 2014 and April 2015 monitoring events. The increase is attributed to the AS blower being offline for replacement and the AS system not operating between June and late September 2015.

Figure 4-5

Example of water Level (ft) mounding effect with air sparge on/off cycles.



Benzene concentrations detected in samples collected from 95-A17-3A in April and September 2015, were 21 µg/L and 28 µg/L, respectively. Samples collected from well 10-A17-8 had benzene detected at 380 µg/L (April 2015) and 180 µg/L (September 2015). Duplicate samples were also collected from well 10-A17-8 during the April and September sampling events. Sample results were consistent with the primary sample (380 µg/L in April and 180 µg/L in September).

Both benzene and TPH-G were either not detected or detected below their respective cleanup levels in samples collected from all the other monitoring wells during 2015. Figures 4-6a through 4-6h presents TPH-G and benzene concentrations in monitoring wells 95-A17-2, 95-A17-3A, 07-A17-7, and 10-A17-8 over time. Analytical data for well 95-A17-4, which has only had a detectable concentration of TPH-G once since 2003 and no detection of BTEX, was not plotted since the well does not provide information on contaminant concentration trend or the effect of the remedial action.

Since startup of the AS/SVE system:

- Well 95-A17-3A is below MTCA cleanup levels for BTEX compounds except for benzene. TPH-G exceeds MTCA cleanup levels, but has decreased significantly since AS/SVE system startup in November 2011 (see Figure 4-6c). However, additional data are necessary to determine if the concentration trend is due to seasonal variability in water column or effective remediation by the AS/SVE system.
- TPH-G and BTEX concentrations are below MTCA cleanup levels at wells 95-A17-2, 95-A17-4, and 07-A17-7.
- Well 10-A17-8 is nearest to the petroleum contamination source and registers the highest concentrations of TPH-G and BTEX. Concentrations of TPH-G have greatly decreased since AS/SVE system startup in May 2012 (see Figure 4-6g). Concentrations of BTEX have also decreased since 2012, and currently only benzene is consistently above the cleanup criteria (see Figure 4-6h). However, there was a spike in TPH-G and several BTEX compounds as discussed previously in this section.

Figure 4-6a. TPH-G Trend for 95-A17-2 (AOC 9-2)

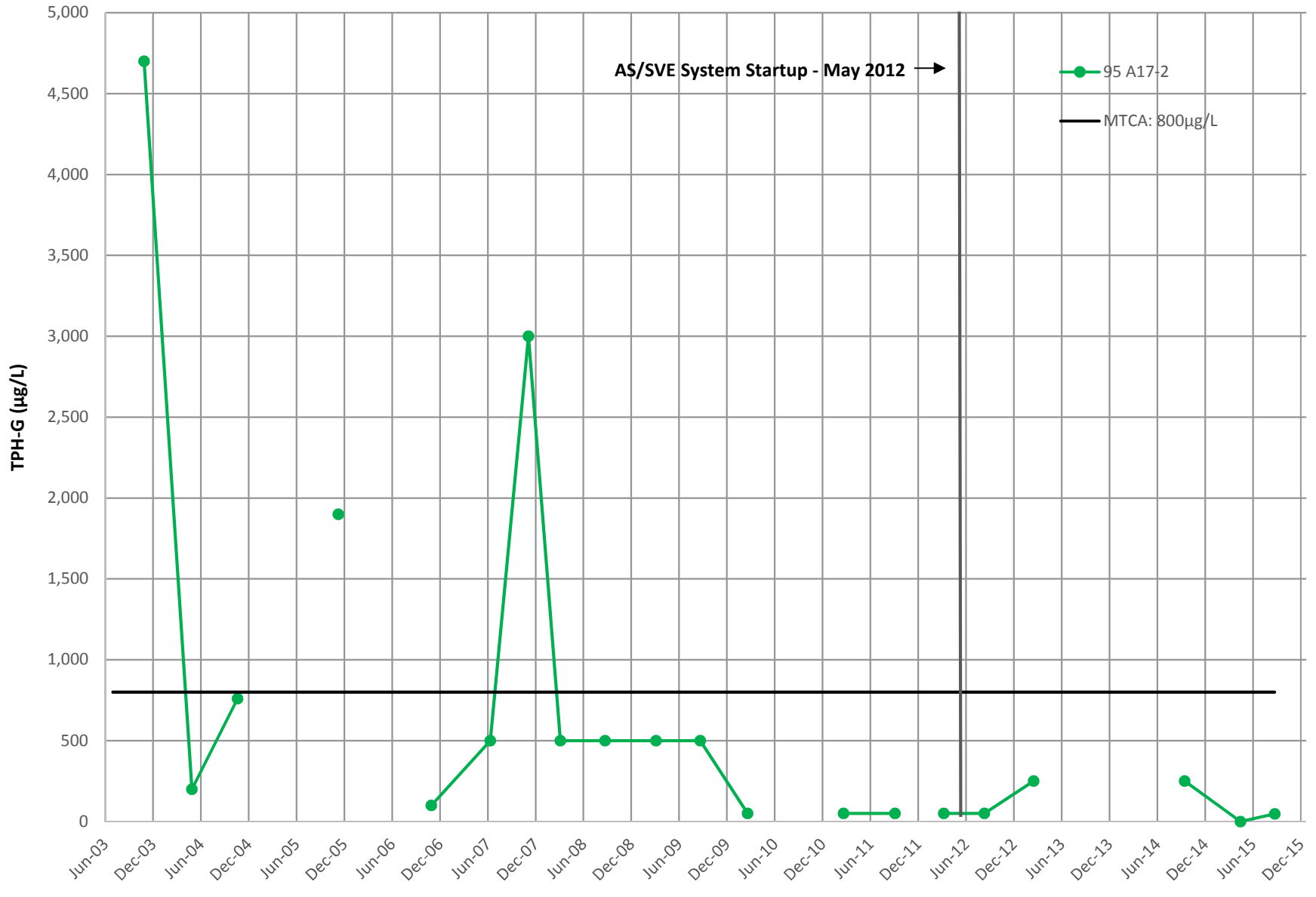


Figure 4-6b. Benzene Trend for 95-A17-2 (AOC 9-2)

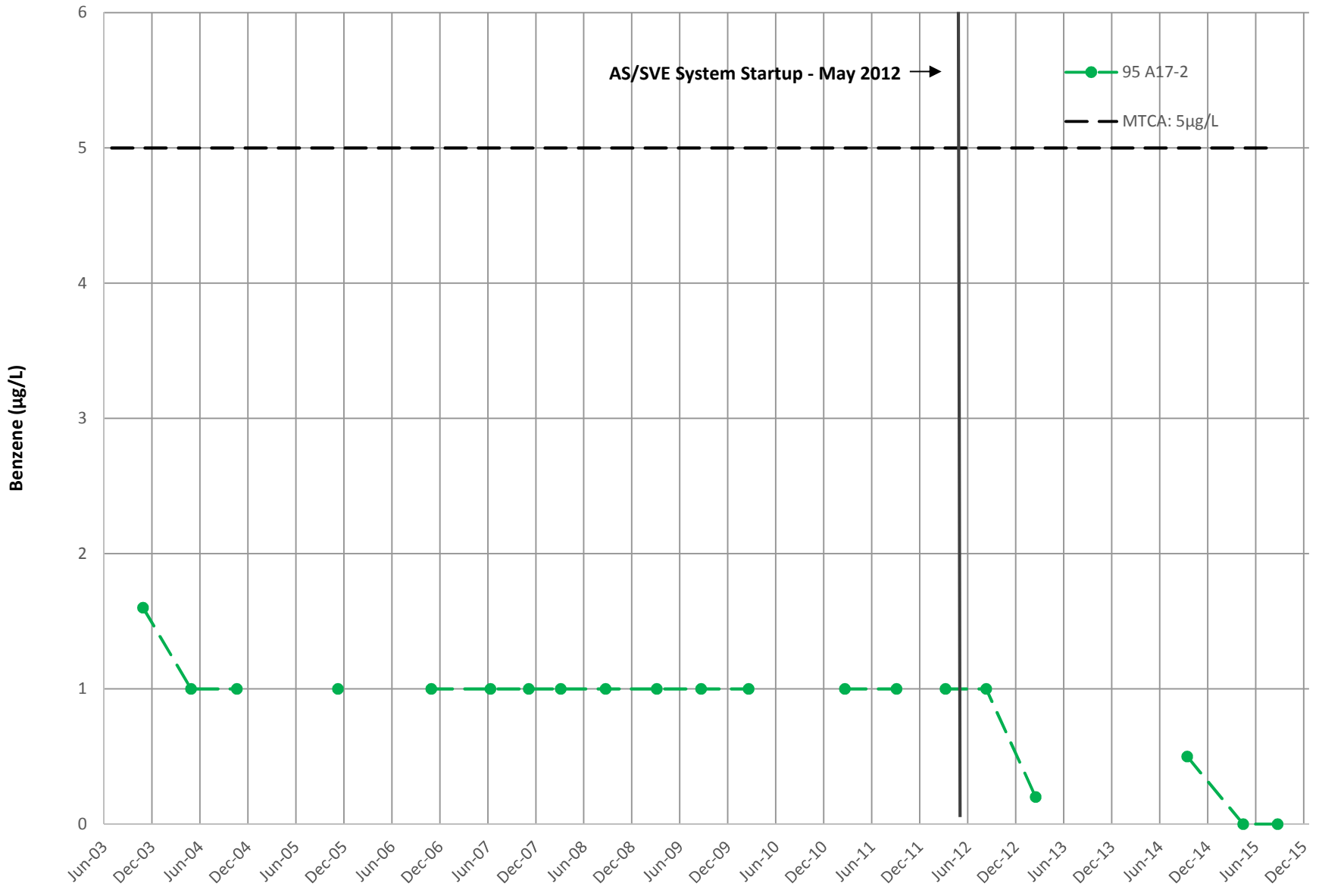


Figure 4-6c. TPH-G Trend for 95-A17-3A (AOC 9-2)

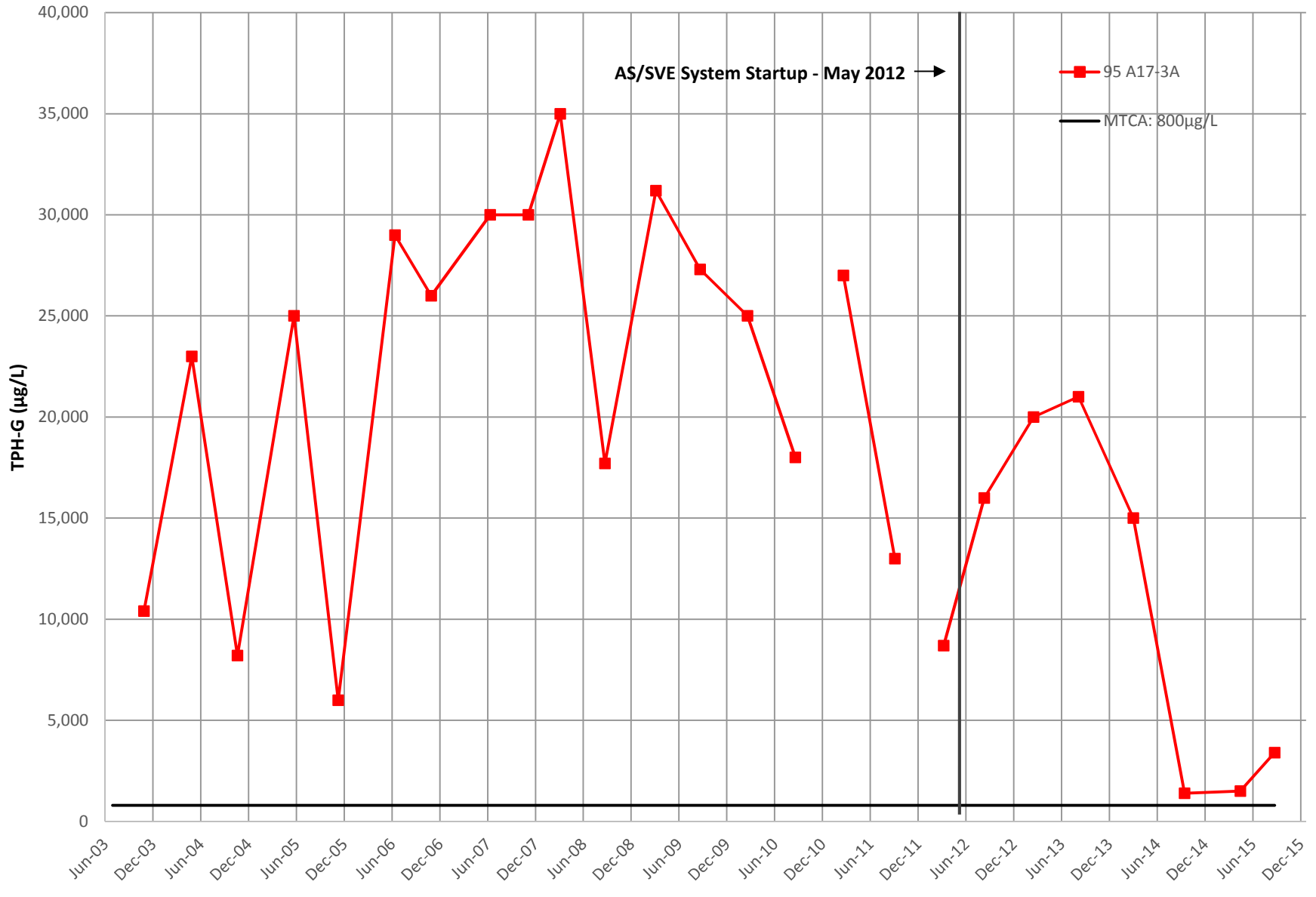


Figure 4-6d. Benzene Trend for 95-A17-3A (AOC 9-2)

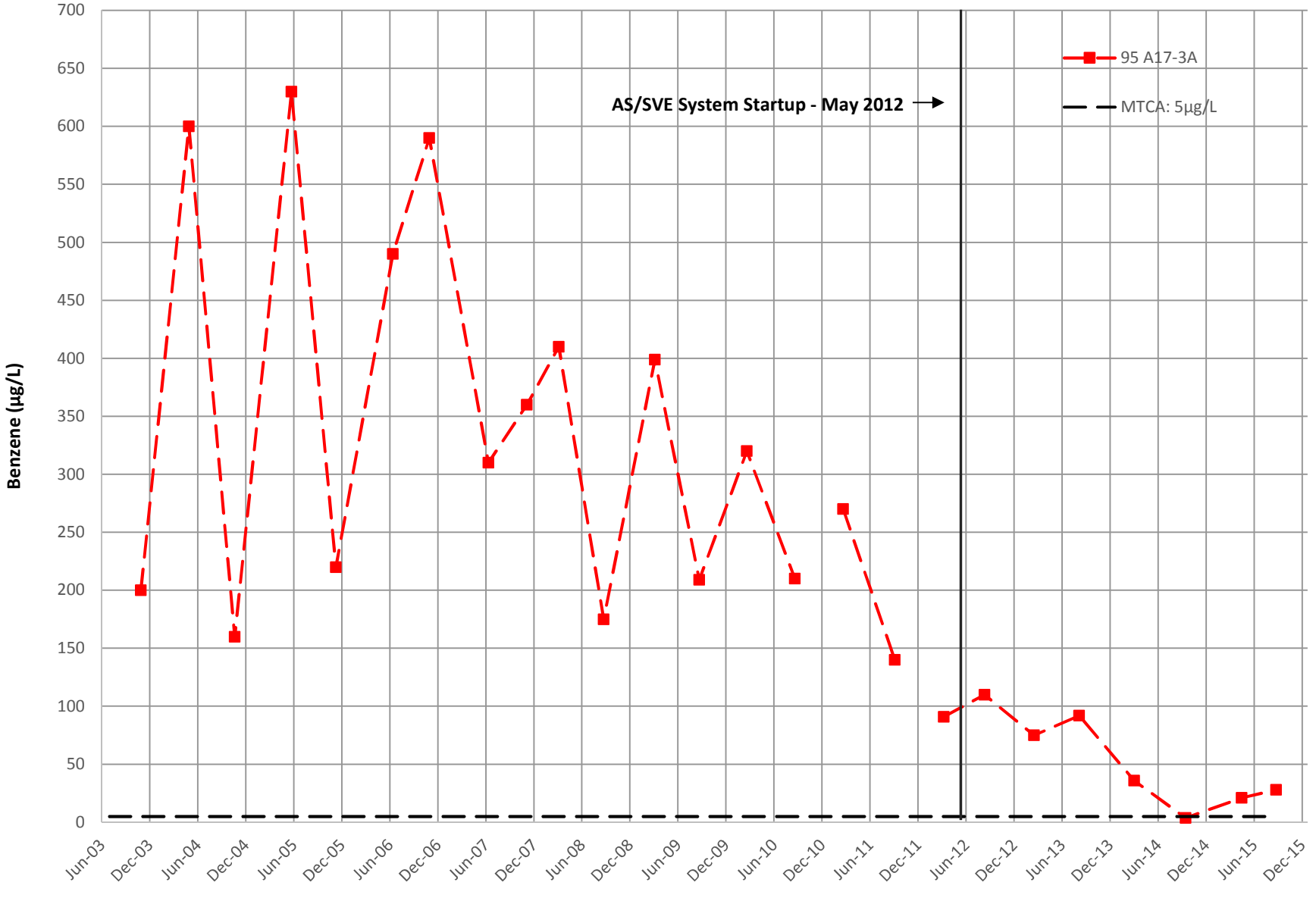


Figure 4-6e. TPH-G Trend for 07-A17-7 (AOC 9-2)

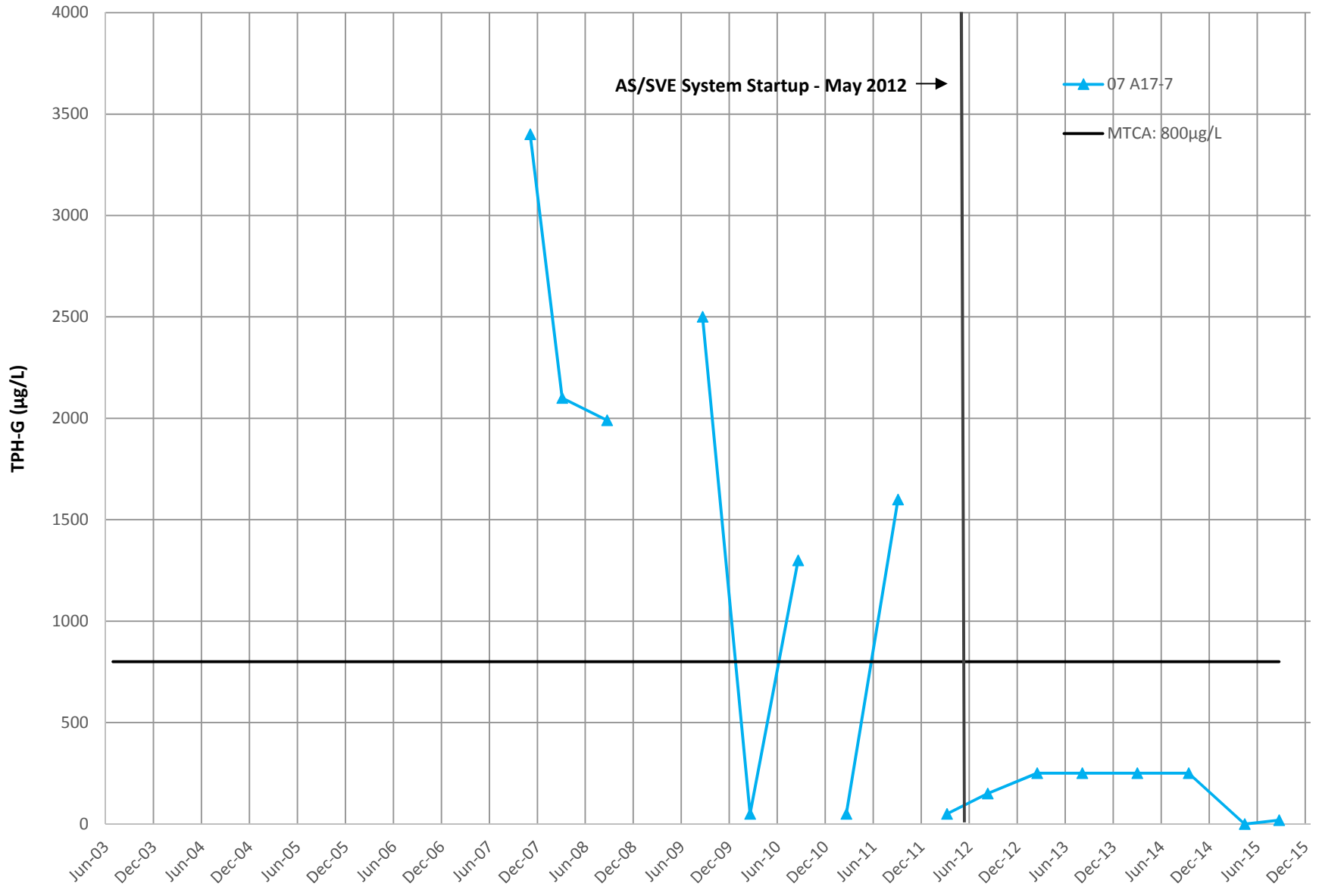


Figure 4-6f. Benzene Trend for 07-A17-7 (AOC 9-2)

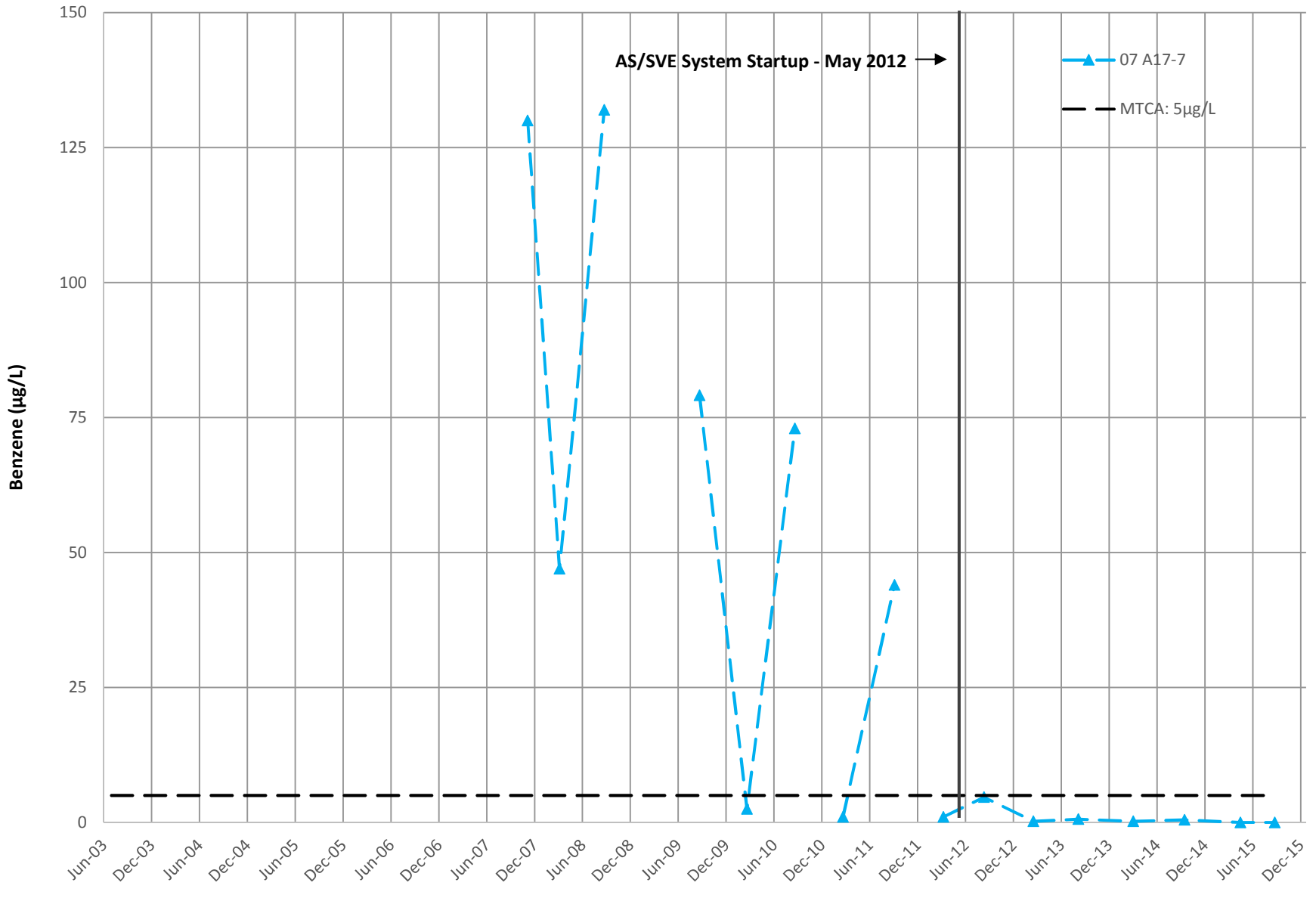


Figure 4-6g. TPH-G Trend for 10-A17-8 (AOC 9-2)

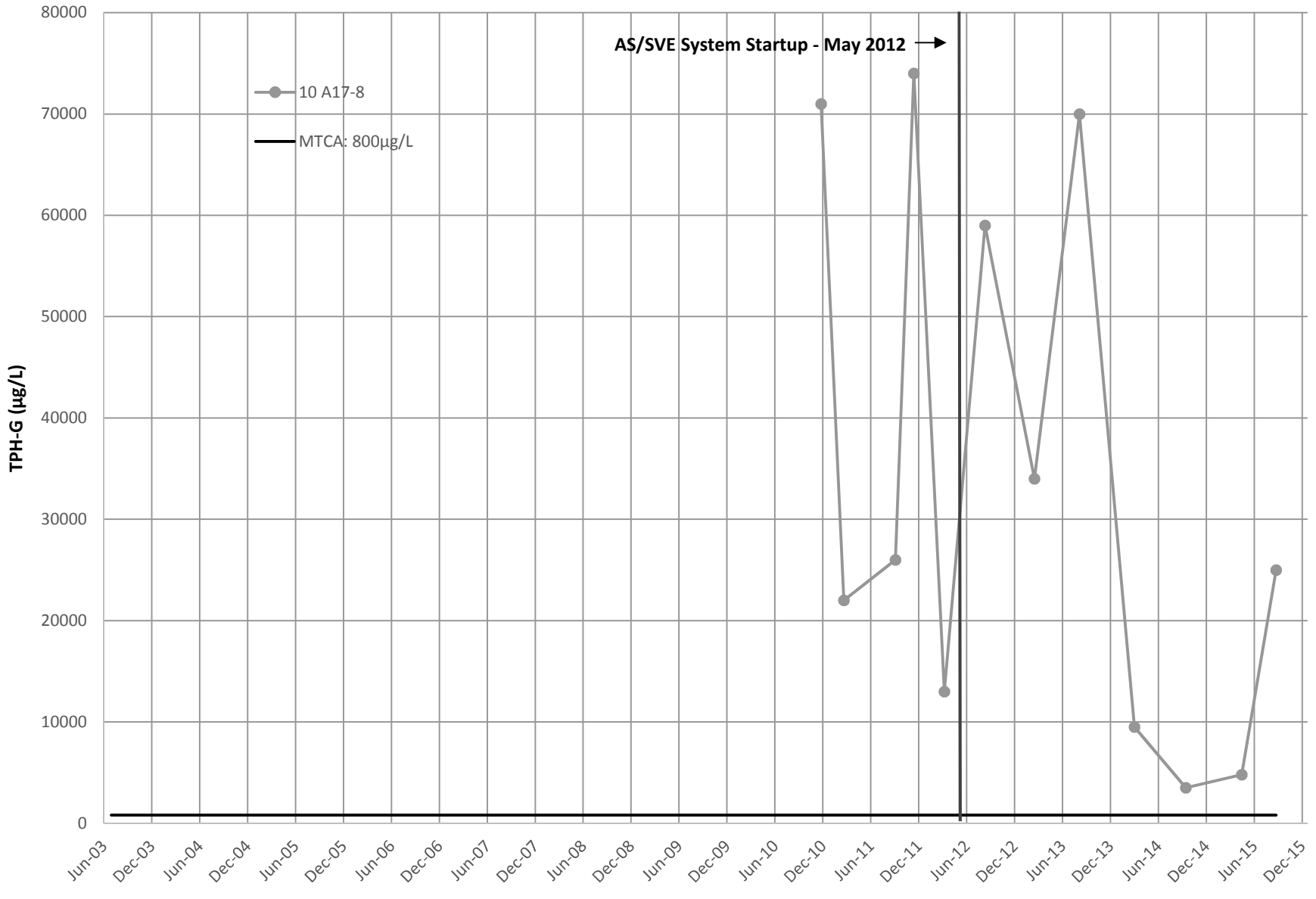
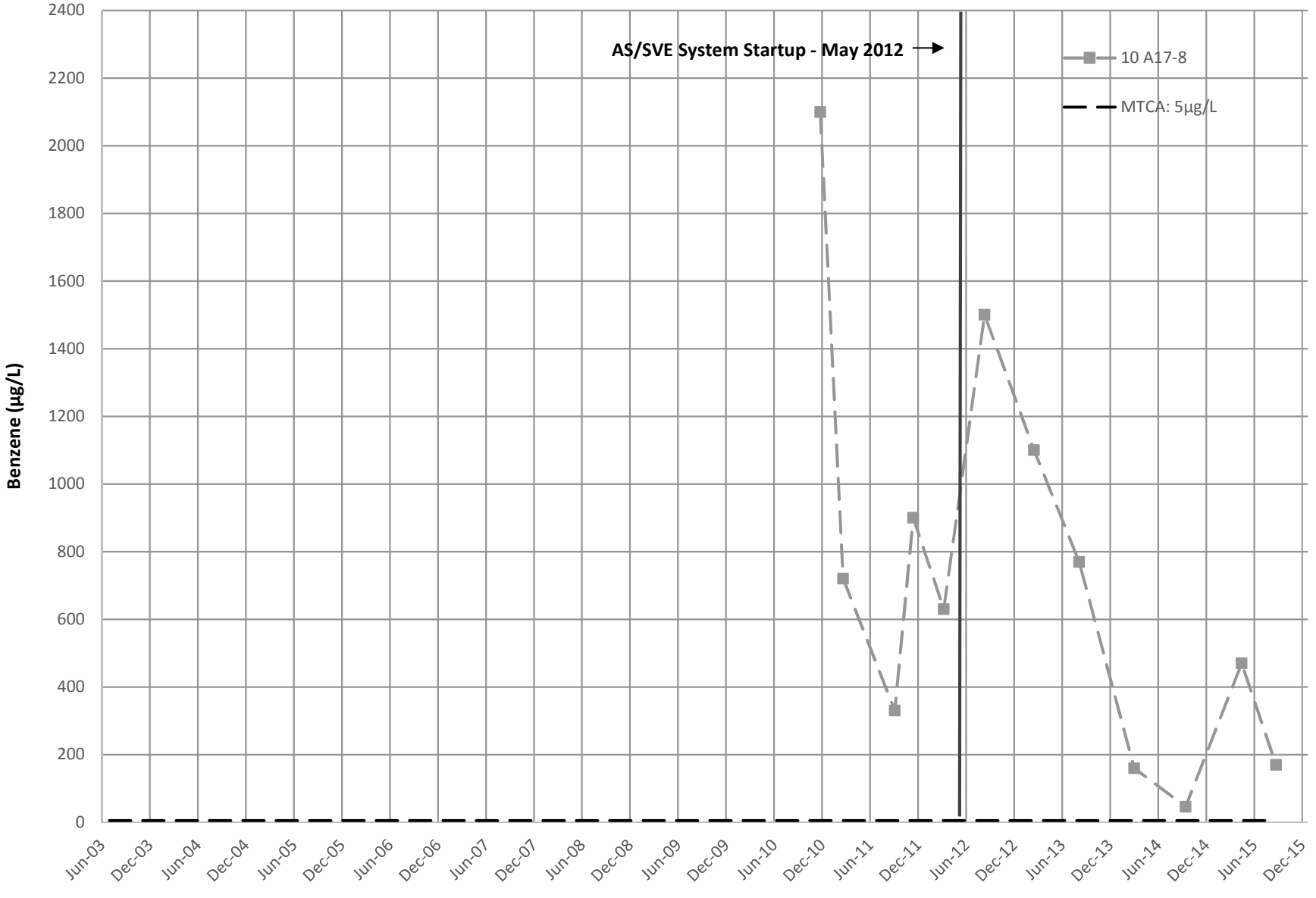


Figure 4-6h. Benzene Trend for 10-A17-8 (AOC 9-2)



5 VAPOR INTRUSION AND AMBIENT AIR MONITORING

Vapor intrusion monitoring is conducted to confirm that VOCs concentrations associated with onsite residual contamination above regulatory criteria are not migrating into the Credit Union building. Ambient air monitoring is used to assess ambient air quality in areas outside the influences of the SVE system and to help determine if other nearby sources may be impacting the air quality within the Credit Union building.

Vapor intrusion monitoring was conducted on December 2, 2015. Air samples were collected using 6-liter Summa canisters (Selected Ion Mode [SIM] certified) equipped with vacuum gauges and calibrated flow regulators. Time-integrated samples were collected for 8 hours from all indoor locations. Summa canisters for indoor air sampling were placed in:

- The Credit Union lobby;
- The Credit Union custodian's closet, located in the north wing of the building. The custodian's closet is the area with the most floor penetrations nearest to the source area. The door to the closet was closed to allow for the most conservative (highest concentration) vapor collection; and
- The Credit Union conference room. The conference room is the largest room in the Credit Union building. The southeast corner of the conference room overlies the former UST area.

No modifications were made to HVAC settings, door positions, use, or activities of building personnel or customers. Additionally, automatic metered room deodorizers were turned off 24 hours before sampling and remained off through the duration of the sampling events. As discussed in the Pilot Test Startup and Vapor Intrusion Monitoring Report (Versar 2013b) the deodorizer system is suspected of interfering with the VOC results for the interior air samples.

Ambient air samples were collected concurrently at:

- South edge of the Credit Union property, on the boundary of the parking lot at the adjacent fueling station and mini-mall. An 8-hour, time-integrated sample was collected at this location.
- West edge of the Credit Union property, on the boundary of the parking lot at the adjacent Fire Station. This sampling location was defined as the upwind direction in the KTA Sampling and Analysis Plan (KTA 2011). An 8-hour time-integrated sample was collected at this location.

- Air intake to HVAC system at the west side of the building. This canister was placed at the elevation of the air intake on top of the cage that protects the building heat pumps. An 8-hour, time-integrated sample was collected at this location at the height of the air intake.

Weather conditions were recorded for the period around each monitoring event. Field readings include temperature, barometric pressure, and relative wind speed.

All samples were sent to Eurofins-Air Toxics of Folsom, California for analysis by Modified Method TO-15 (full scan/SIM) for TPH-G and BTEX. Sampling location are shown on Figure 5-1.

5.1 VAPOR INTRUSION MONITORING RESULTS

Results of vapor intrusion monitoring using Summa canisters are listed in Table 5-1. This table provides a comparison of detected concentrations of gasoline-type VOCs to Ecology Cleanup Levels and Risk Calculation (CLARC) database, and MTCA Method B Cleanup Levels for carcinogens and non-carcinogen compounds. Laboratory reports for air sample analysis are contained in Appendix D.

All air samples collected in December 2015 were non-detect for TPH-G.

The MTCA Method B carcinogen cleanup level of 0.32 $\mu g/m^3$ benzene was exceeded at all sample points inside the building. Elevated concentrations of benzene were observed in the three building interior samples collected (lobby, conference room, and custodian's closet) and ranged in concentration from at 0.91 $\mu g/m^3$ to 1.0 $\mu g/m^3$ (see Table 5-1). However, the ambient air sample collected at the intake for the building HVAC system and an ambient air sample collected from the south parking lot near the AAFES Gas Station contained benzene above MTCA Method B carcinogen cleanup level for benzene at 0.93 $\mu g/m^3$ and 1.0 $\mu g/m^3$, respectively. These results indicate the gas station as a potential source for the elevated benzene concentration detected in the indoor air at the Credit Union building.

Additional testing may be necessary to try to determine the actual source of the benzene detected in indoor air.

5.2 QUALITY ASSURANCE/QUALITY CONTROL REVIEW AND VERIFICATION

Data quality was reviewed and verified by Sealaska personnel to determine if the data is suitable for use. Project data as well as Quality Assurance/Quality Control data (i.e., field quality control results, lab quality control results, practical quantification limits [PQLs], and

holding times) were evaluated in terms of precision, accuracy, representativeness, comparability, and completeness. No corrective action for field or laboratory data were necessary.

5.3 COMPARISON TO 2012 DATA

The initial round of vapor intrusion monitoring was conducted in 2012 after startup of the AS/SVE system. A comparison of 2012, 2014, and 2015 monitoring results are provided in Table 5-2.

The vapor intrusion monitoring data shows a marked decrease from 2012 to 2015 in both TPH-G and BTEX concentrations in samples collected in the Credit Union building and in ambient air. The 2012 TPH-G results for samples collected inside the Credit Union building may have been impacted by a room deodorizer (Versar 2013b). A sample collected from the deodorizer indicated concentrations of several VOCs. However, the net effect of deodorizer on the overall TPH-G concentration was not quantified. In 2015, the deodorizer was turned off 24 hours prior to sampling.

Table 5-1. 2015 Results of Vapor Intrusion Monitoring at AOC 9-2

Lab Sample ID	Summa Canister Number	Sealaska Sample ID	Sampling Location	Date	TPH-G (µg/m^3)	Benzene (µg/m^3)	Toluene (µg/m^3)	Ethyl-benzene (µg/m^3)	Total Xylenes (µg/m^3)[1/]
1512112-01A	D644	AOC92151202 Supply	Ambient - HVAC Intake	12/02/15	ND	**0.93**	3.8	0.46	2.29
1512112-02A	33898	AOC92151202 Conf	Conference Room	12/02/15	ND	**0.91**	37	0.43	2.18
1512112-03A	34259	AOC92151202 Cust	Custodian Closet	12/02/15	ND	**0.92**	4.6	0.46	2.19
1512112-04A	D280	AOC92151202 AAFES	Ambient - AAFES	12/02/15	ND	**1.0**	4.9	0.47	2.41
1512112-05A	11892	AOC92151202 FD	Ambient - Fire Dept.	12/02/15	ND	**0.78**	2	0.13	0.36
1512112-06A	D707	AOC92151202 Lobby	Lobby	12/02/15	ND	**1.0**	4.4	0.47	2.46
1512112-07A	23886	AOC92151202 Grab	Ambient - HVAC Intake	12/02/15	ND	**1.0**	3.9	0.41	1.79
MTCA Method B Carcinogen Cleanup Level					NA	0.32	NA	NA	NA
MTCA Method B Non-Carcinogen Cleanup Level					NA	14	2,300	460	46

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes.
Bold – exceeds most stringent cleanup level.
ND – Not Detected
NA – Not Applicable

Table 5-2. Comparison of 2012, 2014, and 2015 Vapor Monitoring Results

	TPH-G (µg/m^3)			Benzene (µg/m^3)			Toluene (µg/m^3)			Ethylbenzene (µg/m^3)			Total Xylenes (µg/m^3)		
Sampling Location	**2012**	**2014**	**2015**	**2012**	**2014**	**2015**	**2012**	**2014**	**2015**	**2012**	**2014**	**2015**	**2012**	**2014**	**2015**
Ambient - HVAC Intake	98	ND	ND	1.3	0.4	0.9	3.1	1.2	3.8	0.5	0.2	0.5	2.6	0.9	2.3
Conference Room	360	ND	ND	1.8	0.4	0.9	9.4	1.6	3.7	1.0	0.2	0.4	4.9	1.1	2.2
Custodian Closet	410	ND	ND	1.9	0.4	0.9	9.6	2.8	4.6	1.0	0.3	0.5	4.6	1.1	2.2
Ambient - AAFES	170	72	ND	2.0	0.8	1.0	7.1	4.8	4.9	1.0	0.6	0.5	4.6	3.8	2.4
Ambient - Fire Dept.	140	ND	ND	1.7	0.2	0.8	5.6	0.4	2.0	0.8	0.1	0.1	3.8	0.2	0.4
Lobby	34	ND	ND	1.9	0.4	1.0	7.3	1.9	4.4	1.0	0.2	0.5	4.5	1.2	2.5

Notes:
[1/] Total xylenes are calculated from sum of m,p- and o-xylenes
The 2012 TPH-G concentrations for non-ambient samples may have been affected by a building deodorizer. The amount of the impact and what analytes were impacted is not known.
ND – Not Detected

Legend

- Vapor Intrusion Monitoring Location
- Soil Vapor Probe
- Vacuum Port
- Monitoring Well

0 10 20 40
Feet

N

Map Data:
Coordinate System: UTM, Zone 10
Horizontal Datum: WGS 84

USACE

SEALASKA

Figure 5-1
Vapor Intrusion
Monitoring Locations

Path: P:\Production\Fig\JBLM\TO 01A\Credit Union\O&M Report - 2015\Maps\SVE_Fig_5-1_VprIntrMonitoringLoc.mxd
Date: 10/6/2015

6 DEVIATIONS FROM INTERIM ACTION WORKPLAN

The following section provides a list of deviations from the requirements of the Final Interim Action Workplan (Versar 2013a) for both compliance monitoring and vapor intrusion monitoring. Deviations related to groundwater monitoring are presented in the Fort Lewis Agreed Order (FLAO) Groundwater Monitoring Report (Sealaska 2016).

6.1 PERFORMANCE MONITORING

Performance monitoring was completed in general accordance with the Workplan.

6.2 VAPOR INTRUSION MONITORING

Vapor intrusion monitoring was completed in accordance with the Workplan.

7 CONCLUSIONS

Mechanically, the AS/SVE system is functioning as designed. Sparge cycles are evidenced by the groundwater mounding effect at monitoring wells around the contaminant plume.

Current observations related to groundwater and the success of remedial action include:

- Well 95-A17-3A is above MTCA cleanup levels for TPH-G. However, the concentration of TPH-G has decreased significantly since AS/SVE system startup in November 2011. Well 95-A17-3A is below MTCA cleanup levels for BTEX compounds except for benzene, however, additional data are necessary to determine if the concentration trend is due to seasonal variability in water column or effective remediation by the AS/SVE system. Continued monitoring is recommended to compile sufficient data to allow for a valid statistical evaluation of remediation progress.
- TPH-G and BTEX concentrations are below MTCA cleanup levels at wells 07-A17-7 and 95-A17-4. Concentrations of analytes have been near the PQL and below MTCA since 2012.
- Well 10-A17-8 is nearest to the petroleum contamination source and registers the highest concentrations of TPH-G and BTEX. TPH-G and benzene remain above cleanup levels. However, since system startup TPH-G and benzene have declined. Monitoring well 10-A17-8 showed a spike in concentration for TPH-G, toluene, ethylbenzene, and total xylenes for the September 2015 monitoring event when compared to the 2014 and April 2015 monitoring events. The increase is attributed to the AS blower being offline for replacement and the AS system not operating between June and late September 2015.

Although TPH-G and BTEX concentrations have decreased at some wells, continued monitoring of groundwater is needed to verify that remediation is occurring.

Analysis of the SVE exhaust verified that VOCs are being extracted. Results of SVE blower exhaust monitoring in 2015 indicate benzene emissions of less than 0.03 pounds/year and total VOC emissions of less than 20 pounds/year.

Results of vapor intrusion monitoring indicate air concentrations of TPH-G, toluene, ethylbenzene, and xylenes are within MTCA Method B carcinogen and non-carcinogen cleanup levels (see Table 5-1).

Benzene concentrations in air samples collected from within the Credit Union building were slightly above MTCA Method B carcinogen cleanup levels. Elevated concentrations of benzene were observed in the three building interior samples collected (lobby, conference room, and custodian's closet). However, the ambient air sample collected at the intake for the building HVAC system and an ambient air sample collected from the south parking lot near the AAFES Gas Station also contained benzene in excess of the MTCA Method B carcinogen cleanup level. These results indicate the gas station as a potential source for the elevated benzene concentration detected in the indoor air at the Credit Union building.

8 RECOMMENDATIONS

Weekly, monthly, semi-annual, and annual monitoring and/or sampling events should continue in order to evaluate system operation and remediation progress. Additional information on system monitoring and sampling is provided in the Interim Action Workplan (Versar 2013a) and not in this report. The O&M manual replacing the Interim Action Workplan is currently in review by Ecology.

Evaluation of the current monitoring program has been ongoing to determine what monitoring activities are critical for system operations and what activities are not (and can be reduced in frequency or eliminated).

Temperatures, pressures, and flow rates measurements have been conducted on a weekly basis since system startup and are shown to be stable with little to no critical variations. It is recommended that measurement of temperatures, pressures, and flow rates for the AS/SVE system be reduced from weekly to once per month. Weekly site maintenance visits should continue.

9 REFERENCES

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PSCAA (Puget Sound Clean Air Agency). 2015. Regulations I, Article 6.03(b)(94) and Article 5.03(a)(3)(C). November 1, 2015.

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USACE (U.S. Army Corps of Engineers). 1996. Site Assessment Report, Groundwater Field Investigation, Building 10A33, Joint Base Lewis-McChord, Washington. DCN 174. July.

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Versar. 2009b. Draft Design Report, Air Sparge and Soil Vapor Extraction System, Fort Lewis Area of Concern 9-2, North Fort Credit Union. May.

Versar. 2013a. Final Interim Action Workplan for Area of Concern 9-2, Sub-Slab Depressurization, Air Sparge and Soil Vapor Extraction System at Joint Base Lewis-McChord (JBLM). July.

Versar. 2013b. Sub-slab Depressurization, Air Sparge and Soil Vapor Extraction System, Pilot Test Startup and Vapor Intrusion Monitoring Report, Fort Lewis Area of Concern 9-2, North Fort Credit Union. February.

APPENDIX A

FIELD DOCUMENTATION

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MAZAMAKAL						**Day/Date:** 1/9/2015
Weather Condition: (temp, barometer, wind, etc)			37°F, 30.14 in, WNW: ESE 2MPH, RH 97%. MOSTLY CLOUDY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 600, 1200, 1800, 2400			**Time Off:** 630, 1230, 1830, 0030		
AS Blower Vault	11:09	100%	—	58.2	17	
Air Sparge Wells						
11574-ASW-1	11:11	100%	—	45.5	1	
11574-ASW-2	11:00	100%	—	60.1	1	
Extraction Blower Suction						
11574-SVE-BS-1	75%	10:30	23.9	52.3	25	
11574-SVE-BS-2	100%	10:30	36.8	54.0	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	53.2	79.6	**VOCs by PID** (ppbv/ppmv)[d] 12	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.025	0.05	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM ~ 5 MIN

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

A-1

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL					**Day/Date:** FRI 16 JAN 2015	
Weather Condition: (temp, barometer, wind, etc)	48°F, 30.19 in, WIND S 12 MPH, SUNNY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 2400				**Time Off:** 0030, 1230, 1830, 0030	
AS Blower Vault	11:10	100%	—	55.6	17	
Air Sparge Wells						
11574-ASW-1	11:10	100%		46.8	1	
11574-ASW-2	11:00	100%	—	64.9	1	
Extraction Blower Suction						
11574-SVE-BS-1	~~75%~~ 10:40	75%	25.8	51.7	2.5	
11574-SVE-BS-2	~~100%~~ 10:40	100%	35.2	50.8	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	54.0	78.3	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.025	0.03	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

KO DRUM 1/2 FULL, 5 MIN DRAIN TIME).

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

A-2

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 23 JAN 2015
Weather Condition: (temp, barometer, wind, etc)			48°F, 30.40 in, WIND: ESE 2MPH, 98% RH, CLOUDY LIGHT SHOWERS.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1100, 1800, 2400				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	11:18	100%	—	57.5	17	
Air Sparge Wells						
11574-ASW-1	11:20	100%	—	46.9	1	
11574-ASW-2	11:15	100%	—	65.6	0	
Extraction Blower Suction						
11574-SVE-BS-1	11:00	75%	23.1	52.7	~4	LEAKING, READING JUMP 2.5 - 4
11574-SVE-BS-2	11:00	100%	35.2	55.1	8.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	56.5	73.9	**VOCs by PID** (ppbv/ppmv)[d] 0	6 PPB @ FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.025	0.025	0.03	0.03	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 30 JAN 2015
Weather Condition: (temp, barometer, wind, etc)			39° F, 30.34 in, WIND SE 2MPH, 100% RH, MORNING CLOUDY, AFTERNOON SUNNY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 2400				**Time Off:** 0030, 1230, 1830, 0630	
AS Blower Vault	1040	100 %	—	61.0	17	
Air Sparge Wells						
11574-ASW-1	1040	100%	—	48.8	1	
11574-ASW-2	1050	100%	—	65 8	0	
Extraction Blower Suction						
11574-SVE-BS-1	1030	75%	27.3	50.8	4.5	READING ERRATIC 2 - 4.5 PSI
11574-SVE-BS-2	1032	100%	39.3	54.1	8.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	57	73.4	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB @ FIRST PARKING STALL NEXT TO SVE SITES.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.025	0.03	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

DRAINED FOR ~ 5 MIN.

Signature: Tom Millington

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL					**Day/Date:** THURS 5 FEB 2015	
Weather Condition: (temp, barometer, wind, etc)	55°F, 29.60 in, WIND SSW 9 MPH, RH 90%, CLOUDY WITH SHOWERS					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 2400				**Time Off:** 0600, 1230, 1830, 0030	
AS Blower Vault	1115	100%	—	58.4	17	
Air Sparge Wells						
11574-ASW-1	1115	100%	—	50.4	1	
11574-ASW-2	1115	100%	—	56.4		
Extraction Blower Suction						
11574-SVE-BS-1	1100	75	26.2	56.5	4	
11574-SVE-BS-2	1100	100	36.2	56.9	2.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	51.2	74.5	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PID AT FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.025	0.025	0.03	0.035	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: ~~Identify temperature~~ units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 13 FEB 2015
Weather Condition: (temp, barometer, wind, etc)		46°F or ~63°F today. 30.20 in, 93% RH, 0 wind				
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower		**Time On:** 0100, 1200, 1800, 2400			**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	1045	100%	—	64.4	17	
Air Sparge Wells						
11574-ASW-1	1046	100%	—	51.7	1	
11574-ASW-2	1053	100%	—	65.8	1	
Extraction Blower Suction						
11574-SVE-BS-1	1030	75%	23.5	55.6	4	
11574-SVE-BS-2	1030	100%	37.5	56.1	8.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	52.9	78.8	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB AT FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.025	0.025	0.03	0.03	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL					**Day/Date:** FRI 20 FEB 2015	
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 2400				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	1045	100%	—	63.2	17	
Air Sparge Wells						
11574-ASW-1	10:46	100%	—	55.4	1	
11574-ASW-2	10:50	100%	—	66.2	1	
Extraction Blower Suction						
11574-SVE-BS-1	1030	75%	22.4	54.3	4	
11574-SVE-BS-2	1030	100%	35.4	54.5	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	50.5	79.2	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.03	0.03	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMATKAL						**Day/Date:** FRI 27 FEB 2015
Weather Condition: (temp, barometer, wind, etc)			46°F, 29.80 in, WIND: NE 5MPH, 100% HH, RAIN: T CLOUDY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 600, 1100, 1800, 2400			**Time Off:** 630, 1230, 1830, 0030		
AS Blower Vault	1100	100	—	63.2	17	
Air Sparge Wells						
11574-ASW-1	1100	100	—	52.3	1	
11574-ASW-2	1045	100	—	66.1	0	
Extraction Blower Suction						
11574-SVE-BS-1	1040	75	27.3	42.8	4	
11574-SVE-BS-2	1040	100	36.2	42.9	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	51.9	72.3	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB @ FIRST MANIFOLD STACK NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.03	0.03	0.03	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

KO DRUM DRAINED COMPLETELY IN ~5 MIN.

Signature: Tom Malamatkal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						**Day/Date:** FRI 6 MARCH 2015
Weather Condition: (temp, barometer, wind, etc) 61F, 45% Hum			~1500 SUNNY, LIGHT CLOUDS, LIGHT BREEZE FROM SW (3MPH)			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO - 4X/DAY				**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1530			67.6F	17 psig	BLOWER ON AUTO
Air Sparge Wells						
11574-ASW-1	1533	100		53.7	2.0 psig	
11574-ASW-2	1535	100		63.5	0	
Extraction Blower Suction						
11574-SVE-BS-1	1538	75	8.6	58.5	4.0	
11574-SVE-BS-2	1538	100	41.6	57.9	8.0	
Extraction Blower Exhaust (11574-SVE-BE-1)	1540	Always 100%	53.8	58.7F	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
TIME 1506-1520	0.028	0.020	0.025	0.040	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

ACCESS TO STORAGE RM / MECH ROOM BY KATIE (PPC4)

Signature: B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						Day/Date: FRI 13 MARCH 2015
Weather Condition: (temp, barometer, wind, etc) 48°F 99%RH, WIND SE@3MPH, LIGHT CLOUDS @ 1052 AM						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO 4X/DAY				**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1130	100	—	68.0°F	17.5psig	
Air Sparge Wells						
11574-ASW-1	1133	100	—	54.0	3.0psig	gauge not zeroing stuck @3.0
11574-ASW-2	1119	100	—	64.3	0psig	
Extraction Blower Suction						
11574-SVE-BS-1	1151	75	10.1	63.7	3.0	
11574-SVE-BS-2		100	38.3	62.6	7.0	
Extraction Blower Exhaust (11574-SVE-BE-1)	1149	Always 100%	52.8 m/s	88.4	**VOCs by PID** (ppbv/ppmv)[d]	1st parking bay: 0ppbv SVE@1148: 0ppbv

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
1116 –	0.025	0.030	0.035	0.025	0.015	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

- RESET AS BLOWER TIMER TO STANDARD TIME (AHEAD 1 HOUR LAST WEEK) FROM @ 0953 → 1053
- DRAINED KO DRUM AFTER ISOLATING SVE ZONES.
- ASW-1 P-GAUGE STUCK @ 3.0. OPENED BALL VALVE - NO PRESSURE
- CALIBRATION GAS CYLINDER EMPTY (REPLACEMENTS @ LF-2)

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL						**Day/Date:** FRI 20 MAR 2015
Weather Condition: (temp, barometer, wind, etc)			48°F, 30 [illegible] in, WIND SE @ 2MPH CLOUDY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600 1200 1800 2400			**Time Off:** 0630, 1230 1830 ~~0030~~		
AS Blower Vault	10 20	100	–	65.2	17	
Air Sparge Wells						
11574-ASW-1	10:15	100	—	60.0	0	
11574-ASW-2	[illegible]	[illegible]	—	65.2	0	
Extraction Blower Suction						
11574-SVE-BS-1	1000	75	27.2	59.2	3.0	
11574-SVE-BS-2	1000	100	34.5	61.0	7.0	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	51.5	81.0	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.025	0.03	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: ~~Identify~~ temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Bob T.						**Day/Date:** FRI MARCH 27, 2015
Weather Condition: (temp, barometer, wind, etc)			46F, 100% RH, WIND SSE 2MPH			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO, 4X/DAY				**Time Off:** AUTO 4X/DAY 0600, 1200, 1800, 2400	
AS Blower Vault	1137	100	—	67.9	17.5 psig	
Air Sparge Wells						
11574-ASW-1	1139	100	—	56.9	60 psig	
11574-ASW-2	1128	100	—	62.6F	0	
Extraction Blower Suction						
11574-SVE-BS-1		75	7.7	72.1	2.0	
11574-SVE-BS-2		100	34.4	69.6	8.0	
Extraction Blower Exhaust (11574-SVE-BE-1)	1149	Always 100%	52.0	82.0	**VOCs by PID** (ppbv/ppmv)[d] 0	SVE: 0 ppbv @ 1115 Intake box: 0 ppbv @ 1117

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.020	0.055	0.025	0.025	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

ACU ACCESS TO STORAGE ROOM & MECH ROOM BY KATIE

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 3 APRIL 2015
Weather Condition: (temp, barometer, wind, etc)		46°F, 30.20 IN, WIND: S 5 MPH. RH 86% PARTLY CLOUDY.				
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 600, 1200, 1800, 0000				**Time Off:** 630, 1230, 1830, 0030	
AS Blower Vault	1100	100%	—	64.3	17	
Air Sparge Wells						
11574-ASW-1	1045	100%	—	63.2	6	
11574-ASW-2	1045	100%	—	65.5	7	
Extraction Blower Suction						
11574-SVE-BS-1	1030	75	26.3	55.8	4.5	
11574-SVE-BS-2	1020	100	35.3	57.2	8.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	51.7	78.7	**VOCs by PID** (ppbv/ppmv)[d] 0	0 @ EXIST PARKING STALL NEXT TO SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.03	0.04	0.04	0.04	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

KO DRUM DRAINED (~5 MIN)

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** ~~FRI~~ 10 APR 2015
Weather Condition: (temp, barometer, wind, etc)			48°F, 29.85 in, WIND: 9 MPH S		RH: 91% RAINY.	
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 0000			**Time Off:** 0630, 1230, 1870, 0036		
AS Blower Vault	1100	100 %	—	65.1	17	
Air Sparge Wells						
11574-ASW-1	1045	100 %	—	63.0	5	
11574-ASW-2	1045	100 %	—	65.2	7	
Extraction Blower Suction						
11574-SVE-BS-1	1030	75	27.0	55.2	4.5	
11574-SVE-BS-2	1030	100	35.4	56.3	8.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	51.0	77.2	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB @ EXIT MUFFLER STACK NEXT TO SVE0.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.025	0.025	0.03	0.03	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

KO DRUM DRAINED (~5 MIN)

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: ~~Identify~~ temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom Malamakal						**Day/Date:** 4/17/2015
Weather Condition: (temp, barometer, wind, etc)			48°F, 30.30 in, WIND 0 MPH, RH 83% SUNNY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 0000			**Time Off:** 0630, 1230, 1830, 0030		
AS Blower Vault	9:40	100%	—	55.8	3	
Air Sparge Wells						
11574-ASW-1	9:40	100%	- -	52.1	6	
11574-ASW-2	9:45	100%	—	57.3	7	
Extraction Blower Suction						
11574-SVE-BS-1	9:20	75%	25.8	63.6	2.5	
11574-SVE-BS-2	9:20	100%	35.5	60.6	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	52.4	78.4	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB @ FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.025	0.035	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

KO DRUM DRAINED (~5 MIN)

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMIAKAL						**Day/Date:** FRI 24 APR 2015
Weather Condition: (temp, barometer, wind, etc)			52°F, 29.60 in, WIND S 14 MPH, RH: 70% SHOWERS			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 0000				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	11:50	100		54.2	3	
Air Sparge Wells						
11574-ASW-1	11:50	100	—	53.3	6	
11574-ASW-2	11:50	100	—	54.2	7	
Extraction Blower Suction						
11574-SVE-BS-1	11:40	75	23.9	50.3	4	
11574-SVE-BS-2	11:40	100	36.7	51.8	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	519	70.3	**VOCs by PID** (ppbv/ppmv)[d] 20 PPB	6-10 PPB @ FIRST PARKING STALL NEXT TO SVE SHED. SYSTEM WAS OFF 4/23/15 ~8:00 4/24/15 ~12:00 FOR GROUNDWATER SAMPLING EVENT

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.025	0.025	0.03	0.03	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM (~5 MIN)

Signature: [signature]

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

~~b. Identify temperature units.~~

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL						**Day/Date:** 5/1/2015
Weather Condition: (temp, barometer, wind, etc)			61°F, 30.10 in, WSW 8 MPH, RH: 63%			PARTLY CLOUDY.
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 0000				**Time Off:** 0630, 1230, ~~1830~~ 1830, 0030	
AS Blower Vault	~~13~~ 12:60	100%	—	63.3	3	
Air Sparge Wells						
11574-ASW-1	13:02	100%	—	63.2	1	
11574-ASW-2	12:54	100	—	65.6	7	
Extraction Blower Suction						
11574-SVE-BS-1	~~75~~ 12:40	75	25.4	78.1	4	
11574-SVE-BS-2	~~100~~ 12:40	100	35.6	68.4	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	55.4	92.8	**VOCs by PID** (ppbv/ppmv)[d] 26 PPB	~5-6 PPB @ FIRST PARKING STALL NEXT TO SVE SHED

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.025	0.025	0.03	0.035	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM (~5 MIN)

Signature: Tom Malamakal

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL & BOB THOMAS					**Day/Date:** FRI 8 MAY 2015	
Weather Condition: (temp, barometer, wind, etc)	68°F, 30.10, WIND 7MPH, RH: 44%. MOSTLY SUNNY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1200, 1800, 0000				**Time Off:** 0630, 1230, 1830, 0030	
AS Blower Vault	13:27	100%	—	64.3	3	
Air Sparge Wells						
11574-ASW-1	13:28	100 %	—	69.9	6	
11574-ASW-2	13:28	100 %	—	64.5	7	
Extraction Blower Suction						
11574-SVE-BS-1	13:15	~~100~~ 75	21.3	68.6	4	
11574-SVE-BS-2	13:15	100	35.0	67.5	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	53.7	108.6	**VOCs by PID** (ppbv/ppmv)[d] 29	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.020	0.015	0.04	0.05	0.02

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
~~b: Identify temperature units.~~
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						**Day/Date:** FRI 15 MAY 2015
Weather Condition: (temp, barometer, wind, etc) SUN, SPARSE CLOUDS, LIGHT WIND FROM SW, 65F 63% HUM; DWPT: 50F			BAROM 29.88IN; WIND: 11MPH (FROM WEATHER CHANNEL)			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 00, 0600, 1200, 1800			**Time Off:** 30, 0630, 1230, 1830		
AS Blower Vault	1534	100	—	63.1	3psig	
Air Sparge Wells						
11574-ASW-1		100	—	—	—	NA
11574-ASW-2	1531	100	NA	67.6	6psig	
Extraction Blower Suction						
11574-SVE-BS-1	1542	75	14.6	67.8	5-7 "H_2O	
11574-SVE-BS-2	1541	100	41.7	67.6	7.5-8.0 "H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	55.2	105.1	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv @ 1505h @ SVE; 1516h 0 ppbv @ 1st pkg bay

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.01-0.03	0.04-0.06	0.035-0.045	0.044	NA

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

- ACM TELLER'S TOO BUSY TO ESCORT INSIDE.
- DRAINED KO DRUM AFTER READINGS: NO WATER

Signature: B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Bob Thomas						**Day/Date:** Thurs 21 May 2015
Weather Condition: (temp, barometer, wind, etc) @ 2:09 PM (1409)	74F, 57% Hum, 54 Dew Pt, 10 mile vis; wind: NNW 6 MPH; 29.88 in Barom					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO			**Time Off:** AUTO		
AS Blower Vault	1454	100	—	65.8	2.5 psig	
Air Sparge Wells						
11574-ASW-1	1452	100	—	69.9F	7 psig	
11574-ASW-2	1433	100	—	65.9F	7 psig	
Extraction Blower Suction						
11574-SVE-BS-1	1417	~75	10.5	80.6	4 in H_2O	
11574-SVE-BS-2	1418	100	41.5	75.9	6.5 in H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1) 1416h	Always 100%	55.2	118.1 sunny		**VOCs by PID** (ppbv/ppmv)[d] 4	2 → 7 ppbv: 3rd bkg exh from SVE; 4 ppbv @ SVE EXH: 1415 h.; 0 ppbv in SVE BLDG @ 1423h; 1 ppbv @ SVE EXH @ 1424h

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
1430 → 1448	0.020	0.020	0.025	0.025	0.015	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

4/8 ppbv IN ACU LOBBY @ 1428h || CONSTRUCTION (GRADING UNDERWAY @
ACU GUIDE: JESSICA || ADJACENT PROPERTY (TO WEST) - EXHAUST?
20 ppbv @ SE CORNER OF BLDG (@ SSD-S1 CORNER) S1 - CLOSED DURING PID
25 ppbv NEAR AAFES @ AIR/WATER DISPENSER

Signature: Bob Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 29 MAY 2015
Weather Condition: (temp, barometer, wind, etc)			72° F, 30.[illegible], WIND WSW 8MPH, RH 62%, SUNNY PARTLY CLOUDY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 0600, 1100, 1800, 0000			**Time Off:** 0630, 1230, 1830, 0030		
AS Blower Vault	1340	100	—	68.2	5	
Air Sparge Wells						
11574-ASW-1	1340	100	—	68.2	1	
11574-ASW-2	1338	100	—	68.4	7	
Extraction Blower Suction						
11574-SVE-BS-1	13:10	75	23.7	80.2	4	
11574-SVE-BS-2	13:10	100	32.2	78.3	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	50.2	105	**VOCs by PID** (ppbv/ppmv)[d] 41	17 PPB INSIDE SVE SHED 28 @ FIRST PARKING STALL NEXT TO SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.025	0.03	0.035	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

KO DRUM DRAINED ~~[illegible]~~ NO WATER

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 5 JUN 2015
Weather Condition: (temp, barometer, wind, etc)			70°F, 30.10 in, WIND: N 8MPH; RH: 54% SUNNY.			
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** ~~N/A~~			**Time Off:** ~~N/A~~		
AS Blower Vault	11:55	100%	—	66.2	3	
Air Sparge Wells						
11574-ASW-1	11:50	100%	—	72.5	6	
11574-ASW-2				70.3	7	
Extraction Blower Suction						
11574-SVE-BS-1	11:30	75	23.6	83.2	3	
11574-SVE-BS-2	11:30	100	33.8	83.3	7	
Extraction Blower Exhaust (11574-SVE-BE-1)		**Always 100%**	53.4	94.1	**VOCs by PID (ppbv/ppmv)[d]** 2	0 @ FIRST PARKING STALL NEXT TO SVE SHED. PPB

Sub-slab Probe Pressures	**SSD-S1 (SE) (in W.C.)**	**SSD-S2 (SW) (in W.C.)**	**SSD-N1 (NE) (in W.C.)**	**SSD-N2 (NW) (in W.C.)**	**SSD-3 (inside) (in W.C.)**
	0.02	0.015	0.03	0.03	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

~~X~~ AIR SPARGE BLOWER MALFUNCTION DISCOVERED 6/4/2015. POSSIBLE MOTOR FAILURE. SVE FUNCTIONING.

Signature: [signature]

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 12 JUN 2015
Weather Condition: (temp, barometer, wind, etc)			61°F, 30.20 in, WIND: SSW 1 MPH, RH: 63% CLOUDY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA *			**Time Off:** NA *		
AS Blower Vault	12:00	100	—	66.2	1	
Air Sparge Wells						
11574-ASW-1	11:45	100	—	68.6	7	
11574-ASW-2	11:50	100	—	66.8	1	
Extraction Blower Suction						
11574-SVE-BS-1	11:40	75	25.2	65.3	4	
11574-SVE-BS-2	11:40	100	36.1	66.1	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	52.3	87.2	**VOCs by PID** (ppbv/ppmv)[d] 95	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.025	0.02	0.03	0.03

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

* AIR SPARGE BLOWER OFFLINE DUE TO BLOWER MALFUNCTION. REPAIR IN PROGRESS

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL					**Day/Date:** THURS 18 JUN 2015	
Weather Condition: (temp, barometer, wind, etc)	75°F, 30.00 in, WIND: SW 3 MPH, RH: 63%, PARTLY CLOUDY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA				**Time Off:** NA	
AS Blower Vault	10:50	100%	—	77.4	1	SPARGE BLOWER IS OFF, BLOWER NOT WORKING.
Air Sparge Wells						
11574-ASW-1	10:45	100%	—	70.9	~~4~~ 6	
11574-ASW-2	10:45	100%	—	68.4	~~8~~ 1	
Extraction Blower Suction						
11574-SVE-BS-1	10:30	75	23.0	77.6	4	
11574-SVE-BS-2	10:30	100	31.5	76.5	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	51.3	97.8	**VOCs by PID** (ppbv/ppmv)[d] 30 AM	5 AM @ FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.02	0.42	0.025	0.025	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 26 JUN 2015
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA*			**Time Off:** NA*		
AS Blower Vault	11:20	100	—	77.4	1	*BLOWER IS OFF, BLOWER NEEDS REPAIR.
Air Sparge Wells						
11574-ASW-1	11:10	100	—	75.2	6	
11574-ASW-2	11:10	100	—	78.7	1	
Extraction Blower Suction						
11574-SVE-BS-1	11:00	75	22.3	93.4	4	
11574-SVE-BS-2	11:00	100	33.1	92.1	8	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	52.3	105	**VOCs by PID** (ppbv/ppmv)[d] 76 PPB	~20 PPB @ FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.03	0.035	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** 7/10/15
Weather Condition: (temp, barometer, wind, etc)			66°F, 29.90 in, WIND SW 6MPH, 66% RH CLOUDY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA*			**Time Off:** NA*		
AS Blower Vault	12:15	100%	—	73.6	1	BLOWER IS OFF.
Air Sparge Wells						
11574-ASW-1	12:02	100%	—	74.6	6	
11574-ASW-2	12:02	100%	—	70.0	7	
Extraction Blower Suction						
11574-SVE-BS-1	12:15	75	21.5	72.7	~~4~~ 3	
11574-SVE-BS-2	12:15	100	33.5	72.7	~~8~~ 7	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	40	96.1	**VOCs by PID** (ppbv/ppmv)[d] 0 PPB	0 PPB IN FIRST BARRIDGE STILL NEXT TO SVE SHED

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.03	0.03	0.03	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

* AIR SPARGE BLOWER IS OFF. MALFUNCTION. REPAIR IN PROGRESS.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 17 JULY 2015
Weather Condition: (temp, barometer, wind, etc)			73°F, 30.10 in, WIND: N 11 MPH, 44% RH, SUNNY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA			**Time Off:** NA		
AS Blower Vault						
Air Sparge Wells						AIR SPARGING OFF DUE TO COMPRESSOR MALFUNCTION.
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	12:05	75	13.6	87.4	1.5	
11574-SVE-BS-2	12:05	100	30.1	85.9	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	41.6	90°F 115°F @ wall outlet.	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB @ 1FT PARKING STALL NEXT TO SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.02	0.02	0.02	0.03	0.01	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAL						**Day/Date:** FRI 24 JULY 2015
Weather Condition: (temp, barometer, wind, etc)			70°F, 30.10 in, WIND: S 8MPH		52% RH. CLOUDY.	
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA*				**Time Off:** NA*	
AS Blower Vault						OFF
Air Sparge Wells						
11574-ASW-1						OFF
11574-ASW-2						OFF
Extraction Blower Suction						
11574-SVE-BS-1	13:23	75%	18.5	76.2	3	
11574-SVE-BS-2	13:23	100%	30.1	76.2	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	44.3	96.3 @ exhaust 115.7°F @ well	**VOCs by PID** (ppbv/ppmv)[d] 32	0 AT FIRST PACKING STILL WENT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.025	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

GAC pressure @ 21 in H_2O

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 21 JULY 2015
Weather Condition: (temp, barometer, wind, etc)			82°F, 30.10 in, WIND: N 5 MPH, RH: 31% SUNNY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA				**Time Off:** NA	
AS Blower Vault						NOT WORKING
Air Sparge Wells						
11574-ASW-1						SPARGING IS OFF
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	11:30	75	28.3	96.2	3	
11574-SVE-BS-2	11:30	100	33.2	98.2	4	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	44	105 @ exhaust 128 @ exhaust near well	**VOCs by PID** (ppbv/ppmv)[d] ~~300~~ 0	0 @ FIRST PARKING STALL. GAC IS CONNECTED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.02	0.025	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom Mallamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Monitoring Point	Time	Valves (% Open)	Flow (m/s)	Temp. (°C/ °F)[b]	Pressure (in H_2O +/-)[c] (psig)[c]	Comments
Technician: TOM MALAMAKAL						**Day/Date:** FRI 7 AUG 2015
Weather Condition: (temp, barometer, wind, etc)		72°F 30.00 in, WIND: NW 7MPH, RH: 51% SUNNY.				
Air Sparge Blower		**Time On:** NA			**Time Off:** NA	
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						NOT WORKING
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	11:00	75%	23	92.6	6	
11574-SVE-BS-2	11:00	100%	31	91.7	3	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	46	97.3 @ [illegible] 117°F @ wall.	**VOCs by PID** (ppbv/ppmv)[d] 0	3 [illegible]

Sub-slab Probe Pressures	SSD-S1 (SE) (in W.C.)	SSD-S2 (SW) (in W.C.)	SSD-N1 (NE) (in W.C.)	SSD-N2 (NW) (in W.C.)	SSD-3 (inside) (in W.C.)
	0.02	0.02	0.02	0.015	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 14 AUG 2015
Weather Condition: (temp, barometer, wind, etc)			63°F, 30.00 in, WIND SSW 10 MPH, RH: 88% SCATTERED THUNDERSTORMS CLOUDY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** N/A				**Time Off:** N/A	
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	13:00	75	21.3	65	6	
11574-SVE-BS-2	13:00	100	31.7	65	3	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	43.0	109°F @ exhaust	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.05	0.035	0.035	0.035	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

NO AIR SPARGING. SPARGE BLOWER FIX IN PROGRESS.

Signature: Tom Malamakal

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 21 AUG 2015
Weather Condition: (temp, barometer, wind, etc)			63°F ; 30.00 in , WIND: SW 6MPH ; RH: 66% ; CLOUDY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA			**Time Off:** NA		
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	11:30	75	23.0	69.2	3	
11574-SVE-BS-2	11:30	100	30.3	69.7	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	45.3	89.7°F @ exhaust 112°F @ wall	**VOCs by PID** (ppbv/ppmv)[d] 0	0 @ FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.02	0.015	0.03	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

* SPARGING IS OFF. BLOWER NEEDS REPAIR.

Signature: Tom Malamakal

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						**Day/Date:** FRI 28 AUG 2015
Weather Condition: (temp, barometer, wind, etc) 73F; 61% HUM; 29.90 in BAR; DEW PT: 58°F; WIND NW 11 MPH (DATA FROM THE WEATHER CHANNEL)		OVERCAST. OCCASSIONAL RAINDROPS.				
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower		**Time On:** 0F/C			**Time Off:** 0F/C	
AS Blower Vault	0 F/C	—	—	—	—	
Air Sparge Wells						
11574-ASW-1 ~~16Ø1~~		100	—	—	—	AS BLOWER OFF
11574-ASW-2 ~~16Ø2~~		100	—	—	—	" " "
Extraction Blower Suction						
11574-SVE-BS-1	16Ø1	8Ø	17.1	77.6F	1.7	
11574-SVE-BS-2	16Ø2	16Ø	3Ø.4	76.1 F	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	37.4	118.9F DEGREES	**VOCs by PID** (ppbv/ppmv)[d]	BLOWER HOUSING: 123.8 F ~~Ø~~ ppbv IN DRIVEWAY TO NEW GRAVEL LOT; Ø PPBV INSIDE SVE BLDG.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
1540 → 1552	Ø.Ø25	Ø.Ø25	Ø.Ø28	Ø.Ø2Ø	Ø.Ø15

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

CLAIR MANCILLA, ALL BRANCH MGR, ESCORTED TO STORAGE CLOSET FOR SSD-3 READING; NO WATER IN KO DRUM

Ø ppbv @ SVE-GAC EXHAUST. Ø ppbv NEAR DUMPSTER

2ND ROGIN DRIVEWAY = Ø.Ø ppbv

Signature: B. Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 4 SEPT 2015
Weather Condition: (temp, barometer, wind, etc)			52°F, 30.11 in, WIND NE 5MPH, RH 93% CLOUDY			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA				**Time Off:** NA	
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	12:15	75	~~69.6~~ 20.2	66.6	3	
11574-SVE-BS-2	12:15	100	~~69.6~~ 20.8	69.6	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	48.2	90°F @ exhaust 112°F @ well	**VOCs by PID** (ppbv/ppmv)[d] 0	0 @ FIRST PARKING STALL NEXT TO SVE SKID

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.025	0.02	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

AIR SPARGING OFF; BLOWER NEEDS REPAIR

Signature: Tom Malamakal

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						**Day/Date:** PRI 11 SEPT 2015
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments** AS BLOWER NOT WORKING
Air Sparge Blower	**Time On:** OFF			**Time Off:** OFF		
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1	\	\	\	\	\	AS BLOWER OFF
11574-ASW-2	\	\	\	\	\	FAILED MOTOR
Extraction Blower Suction						
11574-SVE-BS-1	1516	75	15.5	75.5	2.0	
11574-SVE-BS-2	1518	100	27.2	75.9	5.0	
Extraction Blower Exhaust (11574-SVE-BE-1) 1514		Always 100%	40.2	129.3F INSIDE	**VOCs by PID** (ppbv/ppmv)[d]	- 1524h: 0 ppbv @ SVE GAC EXH - 1525h: 0 ppbv @ 1ST PKG BAY - 1526h: 0 ppbv @ GAC INLET.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
1455 - 1508	0.025	0.020	0.040	0.030	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

- GAC INLET: 20 IN H_2O ; 102.1 F
- CLAIR MANCILLA ESCORTED FOR SSD-3 RDG:

Signature: B Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						Day/Date: FRI 18 SEPT 2015
Weather Condition: (temp, barometer, wind, etc)			71F, CLOUDY, LIGHT RAIN (INTERMITTENT). 30.09 IN ; WIND SSE 10MPH			
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** OFF			**Time Off:** OFF		
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						OFF
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	1454	75	15.7	75.1F	~~15.7~~ RMT 3.5" H_2O	
11574-SVE-BS-2	1455	100	29.4	74.9F	5.0" H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	45.3	103.1F	**VOCs by PID (ppbv/ppmv)[d]**	1ST PKG BAY: 0ppbv @ 1410h SVE EXH: 0ppbv @ 1450h SVE IN: 32ppbv @ 1450h; 18ppbv @ 1500h

Sub-slab Probe Pressures	**SSD-S1 (SE) (in W.C.)**	**SSD-S2 (SW) (in W.C.)**	**SSD-N1 (NE) (in W.C.)**	**SSD-N2 (NW) (in W.C.)**	**SSD-3 (inside) (in W.C.)**
1428 → 1442	0.020	0.025	0.030	0.025	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

1405: OFF TO DRAIN KO DRUM. NO WATER. RESTARTED.
MARSA, NEW TECH, RETURNED TO STORAGE ROOM.
EXH TEMP: 103.1F @ BASE OF STACK.
BLOWER DISCH: 123.3F @ OUTLET ENABLE (DISCH PORT) **Signature:** B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						Day/Date: FRI 25 SEPT 2015
Weather Condition: (temp, barometer, wind, etc) 1432		58F, CLOUDY, 90% HUM; 55F DEWPT; 30.08 IN; WNW @ 8 MPH				
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** BLOWER OFF				**~~Time Off:~~**	
AS Blower Vault	—	—	—	—	—	OFF
Air Sparge Wells						
11574-ASW-1						OFF
11574-ASW-2						
Extraction Blower Suction				66.1F		
11574-SVE-BS-1	1459	75	22.5	~~22.5~~	3" H_2O	
11574-SVE-BS-2	1500	100	25.1	67.3F	5" H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1) 1458		Always 100%	46.0	96.0F @ GAC INLET; 90.3F @ GAC EXH.	**VOCs by PID (ppbv/ppmv)[d]**	0 ppbv IN SVE SHED @ 1453; 0 ppbv @ SVE GAC EXHAUST @ 1455; 0 ppbv @ SVE INLET @ 1457

Sub-slab Probe Pressures	SSD-S1 (SE) (in W.C.)	SSD-S2 (SW) (in W.C.)	SSD-N1 (NE) (in W.C.)	SSD-N2 (NW) (in W.C.)	SSD-3 (inside) (in W.C.)
1442 – 1451	0.010	0.020	0.025	0.030	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

CLAIRE MANCILLA ESCORTED TO STORAGE ROOM FOR SSD-3 RDG.

Signature: B. Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAR						**Day/Date:** FRI 2 OCT 2015
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** OFF				**Time Off:** OFF	
AS Blower Vault						OFF
Air Sparge Wells						
11574-ASW-1						OFF
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	10:30	75	22.4	63.3	3	
11574-SVE-BS-2	10:30	100	25.2	65.2	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	43.5	100.2	**VOCs by PID** (ppbv/ppmv)[d] 0	0 ppb @ SVE GAC INLET

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.025	0.03	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAL						**Day/Date:** FRI 9 OCT 2015
Weather Condition: (temp, barometer, wind, etc)			61°F, 30.00 IN, WIND SW 6 MPH, RH 99% SHOWERS			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NA (OFF)			**Time Off:** NA (OFF)		
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1	11:30	75	20.0	64.5	3	
11574-SVE-BS-2	11:30	100	26.0	64.5	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	447	87.9°F INTER GAS 95.7°F EQ well	**VOCs by PID** (ppbv/ppmv)[d] 42 PPB	0 @ FIRST PARKING LOT NEXT TO SVE SITE

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.025	0.02	0.02	0.02	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

BLOWER/MOTOR BEING REPAIRED. NO AIR SPARGING AT THIS TIME.

Signature:

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom MALAMAKAR						**Day/Date:** 10/16/2015
Weather Condition: (temp, barometer, wind, etc)			63°F, 30.--in, WIND 0MPH, RH 76%			SUNNY
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** NT				**Time Off:** NT	
~~AS Blower Vault~~						
Air Sparge Wells						
~~11574-ASW-1~~						
~~11574-ASW-2~~						
Extraction Blower Suction						
11574-SVE-BS-1	12:30	75	23.2	67.5	3	
11574-SVE-BS-2	12:31	100	27.3	66.2	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	44.3	98°F @ exhaust 110°F @ well	**VOCs by PID** (ppbv/ppmv)[d] 75	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02	0.02	0.02	0.02	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

Signature: Tom Malamakar

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

– AS COMPRESSOR RESTART

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Bob Thomas						Day/Date: Mon 19 OCT 2015
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** ~0930				**Time Off:** ~1000	
AS Blower Vault	0946				16psig	
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction	SVE BLOWER OPERATING.					
11574-SVE-BS-1						
11574-SVE-BS-2						
Extraction Blower Exhaust (11574-SVE-BE-1)	Always 100%			**VOCs by PID** (ppbv/ppmv)[d]	NOT MEASURED.	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

– BLUE MTN MECH INSTALLED NEW AS COMPRESSOR/MOTOR. OPERATED FOR ~30 MINS THEN A FEW ON/OFF CYCLES TO TEST AUTO TIMER

– KO DRUM EMPTY.

Signature: B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						Day/Date: FRI 23 OCT 2015
Weather Condition: (temp, barometer, wind, etc)			55F, 74% Hum, N 18 mph 30.25 IN			
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** SEE BELOW			**Time Off:**		
AS Blower Vault	1450	100		55F	~~[illegible]~~ 0 psig	
Air Sparge Wells						
11574-ASW-1	1439	100	0	68.8F	7 psig	
11574-ASW-2	1452	100	0	62.3F	6.5 psig	
Extraction Blower Suction						
11574-SVE-BS-1	1503	75	22.5	60.3	3.0	
11574-SVE-BS-2	1504	100	29.8	61.8	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	49.4	114.0F @ OUTLET, BLOWER STEEL	**VOCs by PID (ppbv/ppmv)[d]**	- 0 ppbv in 1st pkg bay - 254 ppbv @ GAC INLET - 2 ppbv @ GAC EXHAUST

Sub-slab Probe Pressures	**SSD-S1 (SE) (in W.C.)**	**SSD-S2 (SW) (in W.C.)**	**SSD-N1 (NE) (in W.C.)**	**SSD-N2 (NW) (in W.C.)**	**SSD-3 (inside) (in W.C.)**
1436 - 1458	0.020	0.020	0.030	0.020	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

- KATIE ESCORTED TO STORAGE + MECH ROOM
- DISCOVERED POWER TO AS BLOWER OFF. SWITCHED ON & CHECKED/VERIFIED TIMER SETTINGS: 0000 - 0030, 0600 → 0630, 1200 - 1230 & 1800 - 1830

Signature: JJ Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMMAD					**Day/Date:** FRI 30 OCTOBER 2015	
Weather Condition: (temp, barometer, wind, etc)	61°F, 29.80 in, WIND S 13 MPH, RH 10% CLOUDY, RAIN					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:**			**Time Off:**		
AS Blower Vault	11:40	100	--	62.4	19	
Air Sparge Wells						
11574-ASW-1	11:40	100%		58.9	10	
11574-ASW-2	11:35	100 %	—	70	9	
Extraction Blower Suction						
11574-SVE-BS-1	11:22	75	23.3	65.5	3	
11574-SVE-BS-2	11:22	100	25.2	65.1	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	42	66.3°F 100°F @ well	**VOCs by PID** (ppbv/ppmv)[d] ~350	8 - 30 ppb @ FIRE'S PARKING SPACE NEXT TO SVE SITE()

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.03	0.03	0.03	0.055	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

Signature: [signature]

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAR					**Day/Date:** FRI 6 NOV 2015	
Weather Condition: (temp, barometer, wind, etc)	55°F, 30.16 in, WIND: S 8MPH, RH: 89% PARTLY CLOUDY.					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 5:03, 11:00, 17:00, 23:00				**Time Off:** 5:30, 11:30, 17:30, 23:30	
AS Blower Vault	11:45	100%	—	113	22	
Air Sparge Wells						
11574-ASW-1	11:40	100%	—	57.4	14	
11574-ASW-2	11:35	100%	—	68.3	12	
Extraction Blower Suction						
11574-SVE-BS-1	11:30	75	25.1	62.7	4	
11574-SVE-BS-2	11:30	100	26.1	62.4	6	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	45.8	100.9	**VOCs by PID** (ppbv/ppmv)[d] ~300	~2 ppm AT FIRST PARKING STALL NEXT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.03	0.025	0.02	0.02	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

DRAINED KO DRUM (~5 MIN)

Signature: [signature]

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: TOM MALAMAKAR						**Day/Date:** FRI 13 NOV 2015
Weather Condition: (temp, barometer, wind, etc)			55°F, 29.90 in, WIND S 16 MPH; RH: 98% RAINY.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** 5:00, 11:00, 17:00, 23:00				**Time Off:** 5:30, 11:30, 17:30, 23:30	
AS Blower Vault	11:55	100	—	110	22	
Air Sparge Wells						
11574-ASW-1	11:52	100	—	66	14	
11574-ASW-2	11:52	100	—	68	12	
Extraction Blower Suction						
11574-SVE-BS-1	11:45	75	23.2	62.5	3	
11574-SVE-BS-2	11:45	100	26.1	62.7	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	44	109 °F	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPB AT POINT ABOVE STILL WENT TO SVE SHED.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
	0.03	0.03	0.03	0.03	0.015	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

DRAINED KO DRUM (~5 MIN)

Signature: Tom Malamakar

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS TOM MALAMAKAL					**Day/Date:** FRI, SAT, MON 18-~~22~~ 23 NOV 2015	
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO 4-30MINS/DAY			**~~Time Off:~~**	1200-1230, 0600-0630,	
AS Blower Vault					0000-0030; 1800-1830	
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						NO READINGS ON SITE
Extraction Blower Suction						TO TAKE NEW FITTINGS
11574-SVE-BS-1						& START AS BLOWER
11574-SVE-BS-2						
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%			**VOCs by PID** (ppbv/ppmv)[d]	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

FRI 19 NOV 2015 - DISCOVERED SVE BLOWER LINE FALLEN OFF / BLOWER TRIPPED
REBUILT LINE / RESTARTED. AS BLOWER OFF UNTIL VERIFY INTEGRITY OF SVE BLOWER
SAT 20 NOV - RESTARTED SVE BLOWER / ALLOWED FOR GLUE TO DRY.
MON 22 NOV. DRAINED KO DRUM; DUCT TAPED **Signature:** B. Thomas

Notes: SVE EXHAUST LINE. REPROGRAMMED AS BLOWER FOR CORRECT TIMES / RESTARTED

a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units. – AUTO, 4X/DAY.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Tom McLaughlin						**Day/Date:** FRI 27 NOV 2015
Weather Condition: (temp, barometer, wind, etc)			39°F, 30.40, NNW WNW Slight, RH 75% Sunny.			
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:**			**Time Off:**		
AS Blower Vault	12 20	100 %	—	58.3	26	
Air Sparge Wells						
11574-ASW-1	12 25	100 %	—	54.2	13	
11574-ASW-2	12 30	100 %	—	66.4	14	
Extraction Blower Suction						
11574-SVE-BS-1	12 15	75	22.3	58.-	5	
11574-SVE-BS-2	12 15	100	25.1	58.2	5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	42.5	85	**VOCs by PID** (ppbv/ppmv)[d] 0	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.015	0.015	0.015	0.015	0.01

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

Signature: Tom McLaughlin

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS; TOM MALAMAKAL						Day/Date: WED 2 DEC 2015
Weather Condition: (temp, barometer, wind, etc)			30.00 IN VIA WEATHER.COM @1351 PARTLY CLOUDY; OCCASIONAL LIGHT RAIN			
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** AUTO			**Time Off:**	ON/OFF 4X/DAY	
AS Blower Vault	1341	100	—	10 C	26	62.6 F @ AS OUTLET W/ IR
Air Sparge Wells						
11574-ASW-1	1350	100	OFF	47.3	13	
11574-ASW-2	1357	100	—	69.6	12.5	
Extraction Blower Suction						
11574-SVE-BS-1	1405	75	21.2	54.5	2.5	
11574-SVE-BS-2	1406	100	25.3	57.2	5.5	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	42.8 m/s @STACK OUTLET	84.5	VOCs by PID (ppbv/ppmv)[d] 0	0-10 ppb @ FIRST PARKING LOT NEXT TO SVE SHED. 0 ppbv @ SSD-3 111.9 F @ BLOWER DISCHARGE (INSIDE)

Sub-slab Probe Pressures	SSD-S1 (SE) (in W.C.)	SSD-S2 (SW) (in W.C.)	SSD-N1 (NE) (in W.C.)	SSD-N2 (NW) (in W.C.)	SSD-3 (inside) (in W.C.)
	0.025	0.025	0.038	0.037	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

- VI MONITORING (SUMMA CANISTERS) UNDERWAY - INSIDE & OUTSIDE

Signature: B Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Bob T.						**Day/Date:** Tues 10/10/2010
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** ______			**Time Off:** ______		
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1						
11574-SVE-BS-2						
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%			**VOCs by PID** (ppbv/ppmv)[d]	-550 ppbv @ SVE GAC in -17 ppbv @ GAC out (blended) -23 in 1st pkg bay
Sub-slab Probe Pressures		**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

AS blower on w/ incorrect auto setting. 1200 PM → 1230 AM
reset to 1200 pm → 1230 pm
∴ operated ~ 9 hrs

Signature: B Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS						**Day/Date:** MON 7 DEC 2015
Weather Condition: (temp, barometer, wind, etc)						
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO				**Time Off:** AUTO	
AS Blower Vault						
Air Sparge Wells						
11574-ASW-1						
11574-ASW-2						
Extraction Blower Suction						
11574-SVE-BS-1						
11574-SVE-BS-2						
Extraction Blower Exhaust (11574-SVE-BE-1)		~~Always~~ 100%			~~VOCs by~~ **PID** (ppbv/ppmv)[d]	

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

- SITE VISIT TO DRAIN KO DRUM.
- SVE BLOWER OFF TEMPORARILY } BACK ON TO ISOLATE SVE ZONES FOR H_2O REMOVAL
- DRAINED KO DRUM 2X.

Signature: B Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS					Day/Date: FRI 11 DEC 2015	
Weather Condition: (temp, barometer, wind, etc)	45°F, CLOUDY, 29.60 IN Hg; 98% HUMIDITY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO 4/X/DAY				**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1500	100	OFF (AUTO)	57.9	27 psig	
Air Sparge Wells						
11574-ASW-1	1504	100	OFF	49.3	13 psig	
11574-ASW-2	1455	100	OFF	68.3	12 psig	
Extraction Blower Suction						
11574-SVE-BS-1	1353	75	8.3	48.9	25 "H_2O	
11574-SVE-BS-2	1355	100	27.8	52.8	12 "H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)		Always 100%	42.5	GAC IN: 84.1°F OUT: 80°F	**VOCs by PID** (ppbv/ppmv)[d]	0 ppbv IN SVE BLDG @ 1425h 0 ppbv next to garbage area @ 1427h 0 ppbv @ GAC EXH @ 1428h 0 ppbv @ GAC INLET @ 1430h 195 ppbv SVE → GAC @ 1508 (GAC INLET) *

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
1435 → 1453h	0.015	0.012	0.020	0.018	0.015	

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

- DRAINED KO DRUM. ISOLATED EACH ZONE FOR SEVERAL MINUTES / REDRAINED
- * DELAY IN VOCs @ SVE EXHAUST PROBABLY DUE TO TIME FOR RE-MIGRATION AFTER SVE BLOWER SHUT DOWN FOR KO DRUM DRAINING.

Signature: B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Bob T.						**Day/Date:** FRI 18 DEC 2015
Weather Condition: (temp, barometer, wind, etc)	@ 1340h; WIND 12 mph SSE; 29.88 in Hg 43F; CLOUDY, OCC. SHOWERS, 91% Humi;					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO				**Time Off:** AUTO	
AS Blower Vault	1405	100	—	59.1F	28 psig	
Air Sparge Wells						
11574-ASW-1	1403	100	—	47.2F	15.0 psi	@ 1403h
11574-ASW-2	1359	100	—	68.6F	12.5 psi	
Extraction Blower Suction						
11574-SVE-BS-1	1415	75	5.9	49.4F	4.0 "H_2O	
11574-SVE-BS-2	1417	100	31.2	55.1F	5.5 "H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1) 1412h	Always 100%		42.5	107.4F = SVE 1ST PVC FITTING; 86.9F GAC IN	**VOCs by PID** (ppbv/ppmv)[d]	23 ppbv @ 1ST pkg bay next SVE 67 ppbv @ SVE INLET @ 1342h. 0 ppbv @ SVE EXH @ 1410h. 0 ppbv @ GAC EXIT @ 1421h.

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)	
1345, 1348, 1351, 1353	0.015	0.015	0.020	0.015	0.014	@ 1401h.

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.

8 ppbv @ GAC IN @ 1422.

1426h: SYSTEM OFF TO DRAIN KO DRUM. ISOLATED SVE ZONES & DRAINED AGAIN.

Signature: Bob Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: BOB THOMAS & TOM MILAMAKAL						**Day/Date:** THURS 24 DEC 2015
Weather Condition: (temp, barometer, wind, etc)	36°F, 29.10 in, WIND S 15 MPH, RH 92%, MOSTLY SUNNY					
Monitoring Point	**Time**	**Valves** (% Open)	**Flow** (m/s)	**Temp.** (°C/ °F)[b]	**Pressure** (in H_2O +/-)[c] (psig)[c]	**Comments**
Air Sparge Blower	**Time On:** AUTO 4X/DAY				**Time Off:** AUTO	
AS Blower Vault	10:45	100%	—	62.3	20	
Air Sparge Wells						
11574-ASW-1	10:50	100%	OFF	44.1 F	17 psig	
11574-ASW-2	10:55	100%	OFF	68 F	12 psig	
Extraction Blower Suction						
11574-SVE-BS-1	11:00	75%	14.4	—	8 in H_2O	
11574-SVE-BS-2	11:05	100%	30.5	—	8 in H_2O	
Extraction Blower Exhaust (11574-SVE-BE-1)	Always 100%		42.2	NOT MSD —	**VOCs by PID** (ppbv/ppmv)[d] 0	0 PPM AT INLET MANIFOLD SMALL VENT TO SVE SYSTEM

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
	0.02 - 0.025	0.018 - 0.020	0.020	0.020	0.015

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

READINGS BY BOB T & TOM M.

MARCA ESCORTED TO SSD-3 (STORAGE CLOSET) & MECH RM (ASW-2).

Signature: B. Thomas

Notes:

a: Identify phase of testing, AS and SVE valve positions, etc.;

b: Identify temperature units.

c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).

d. Identify units of measurement.

Air Sparge Blower, Air Sparge Wells, Extraction Laterals, Extraction Blower, Subslab Depressurization

Technician: Bob T / Tom M.						Day/Date: THURS 31 DEC 2015
Weather Condition: (temp, barometer, wind, etc)			36F; 30.60 in Hg ; 63% RH; 0mph wind. MOSTLY SUNNY.			
Monitoring Point	**Time**	**Valves (% Open)**	**Flow (m/s)**	**Temp. (°C/ °F)[b]**	**Pressure (in H_2O +/-)[c] (psig)[c]**	**Comments**
Air Sparge Blower	**Time On:** AUTO 4X/DAY				**Time Off:** AUTO 4X/DAY	
AS Blower Vault	1259	100	N/A	77.5F	29 psig + DECREASING	
Air Sparge Wells						
11574-ASW-1		100	~~100~~ NA	39.8F	14.0 psig	
11574-ASW-2		100	~~215~~ NA	68.5	12.	
Extraction Blower Suction						
11574-SVE-BS-1	1250	75	4.8	50.0	3.0	
11574-SVE-BS-2	1252	100	21.5	52.0	6.0	
Extraction Blower Exhaust (11574-SVE-BE-1) 1248		Always 100%	43.1	86.8	**VOCs by PID (ppbv/ppmv)[d]**	0 ppbv @ GAC EXIT @ 1309 5 ppbv @ SVE INLET

Sub-slab Probe Pressures	**SSD-S1 (SE)** (in W.C.)	**SSD-S2 (SW)** (in W.C.)	**SSD-N1 (NE)** (in W.C.)	**SSD-N2 (NW)** (in W.C.)	**SSD-3 (inside)** (in W.C.)
1250 – 1307	0.010	0.015	0.015	0.015	0.010

Comments (e.g. Duration of KO drum draining, Valve Position Changes, Samples, etc.)

- SUBSLAB READINGS BY TOM M.
- 0 ppbv @ pkg lot ; 0 ppbv @ SVE SHACK INTERIOR.
- 0 ppbv in AS VAULT @ ~1252

Signature: B. Thomas

Notes:
a: Identify phase of testing, AS and SVE valve positions, etc.;
b: Identify temperature units.
c: Identify negative or positive pressure. (in H_2O for SVE blower, psig for sparge blower).
d. Identify units of measurement.

SEALASKA ENVIRONMENTAL

Sealaska Environmental Services

Marine Science Center, P.O. Box 869
18743 Front Street, NE, Suite 201
Poulsbo, WA 98370

Sampling Matrix Form

Sample ID	Date	Time	Sample ID	BTEX and TPH-G EPA TO-15 Tedlar Bag	Differential Pressure (in. W.C)	Comments
AOC92150604SVP1A	6-4-2015	8:10	AOC92YYMMDDSVP1A	1	0.06	450 PPB
AOC92150604SVP1B	6-4-2015	8:30	AOC92YYMMDDSVP1B	1	0.06	6000 PPB
AOC92150604SVP2A	6-4-2015	8:45	AOC92YYMMDDSVP2A	1	0.035	80 PPM
AOC92150604SVP3A	6-4-2015	9:10	AOC92YYMMDDSVP3A	1	0.035	< 200 PPM
AOC92150604SVP4A	6-4-2015	11:00	AOC92YYMMDDSVP4A	1	0.025	30 PPM
AOC92150604SVP5A	6-4-2015	9:40	AOC92YYMMDDSVP5A	1	0.04	32 PPM
AOC92150604SVP5B	6-4-2015	10:00	AOC92YYMMDDSVP5B	1	0.04	35 PPM
AOC92150604SVP6A	6-4-2015	10:20	AOC92YYMMDDSVP6A	1	0.04	70 PPM
AOC92150604SVPDUP			AOC92YYMMDDSVPDUP	1		
AOC92150604SVP7A	6-4-2015	11:45	AOC92YYMMDDSVP7A	1	0.035	150 PPM
AOC92150604SVP7B	6-4-2015	12:00	AOC92YYMMDDSVP7B	1	0.035	150 PPM
AOC92150604SVP8A	6-4-2015	12:10	AOC92YYMMDDSVP8A	1	0.035	32 PPM.
Total				~~12~~ 11		

Laboratory: Eurofins PO#: PO-01331 **Turnaround Time (TAT):** Standard

Duplicate MS/MSD

APPENDIX B

AIR SPARGE SYSTEM FIELD DATA

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (°F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (°F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (°F)
5/11/2012	-	-	-	-	-	-	-	-	52	18			
9/21/2012	-	-	-	-	-	-	-	-	60	18			
9/28/2012	-	-	-	-	-	-	-	-	205	14			
10/11/2012	-	-	-	-	-	-	-	-	205	15			
10/19/2012	-	-	-	-	-	-	-	-	205	15			
10/29/2012	-	-	-	-	-	-	-	-	205	16			
11/5/2012	-	-	-	-	-	-	-	-	205	15			
11/30/2012	11:55	12:40	-	-	-	-	-	-	190	16	63.4	16	49.9
1/17/2013	9:08	10:18	-	-	-	-	-	-	180	16	42.8	17	56.1
1/25/2013	13:14	13:56	-	-	-	-	-	-	200	16	45.5	16.5	
2/8/2013	8:58	10:55	-	-	-	-	-	-	200	16.5	46.4	16.5	56.4
2/15/2013	12:25	13:19	-	-	-	-	-	-	200	16		17	
2/27/2013	9:30	10:30	-	-	-	-	-	-	190	17		13	
3/8/2013	10:15	11:14	-	-	-	-	-	-	185	16	48.8	17	58.6
3/22/2013	10:04	12:32	-	-	-	-	-	-	184.3	16.5	55.3	16.5	
3/29/2013	9:38	13:52	-	-	-	-	-	-	224	15	59.6	17	73.1
4/5/2013	10:20	12:34	-	-	-	-	-	-	210	16	57.5	16.5	
4/19/2013	10:18	13:29	-	-	-	-	-	-	215	16	63.4	13.5	63.4
6/28/2013	9:40	12:30	-	-	-	-	-	-	204	14.5	71.8	15	84.5
7/12/2013	9:46	14:28	-	-	-	-	-	-	160	15	76.8	16	72.3
7/19/2013	11:23	13:41	-	-	-	-	-	-	205	14.5	72.1	15	
8/2/2013	13:26	15:06	-	-	-	-	-	-	145	14.5			
8/15/2013	10:14	13:58	-	-	-	-	-	-	225	15	80.8	15.5	73.5
8/23/2013	11:16	15:22	-	-	-	-	-	-	230	15	77.8	15	
9/13/2013	11:42	15:08	-	-	-	-	-	-	225	14.5	75.5	15	74.2
10/4/2013	9:25	14:07	-	-	-	-	-	-	225	14.5	62.4	16.5	69.3
10/10/2013	12:10	12:11	-	-	-	-	-	-		16			57
11/7/2013	9:12	11:39	-	-	-	-	-	-	210	15	55.1	15.5	64.9
11/14/2013	13:20	14:25	-	-	-	-	-	-	200	15	53.7	16	65.9
11/22/2013	8:33	9:33	-	-	-	-	-	-	175	16	49.8	16	59.6
11/26/2013	11:05	11:54	-	-	-	-	-	-	180	16.5	48.2	17	57.9
12/12/2013	10:32	11:40	-	-	-	-	-	-	175	16	41.8	17	
1/2/2014	9:45	11:00	-	-	-	-	-	-	177	15	46.1	16	60.3
1/10/2014	10:26	12:44	-	-	-	-	-	-	200	15.5	46.9	15.5	61.2
1/16/2014	9:45	13:30	-	-	-	-	-	-	177	15	45.8	16	60.8
1/23/2014	9:15	10:15	-	-	-	-	-	-	176	16	46.1	16	58.2
1/30/2014	9:21	12:50	-	-	-	-	-	-	200	15	46.1	15.5	60.6
2/6/2014	9:00	10:00	-	-	-	-	-	-	170	16.5	43	16	50.2
2/20/2014	12:40	13:40	-	-	-	-	-	-	180	16	45.6	17	61.8
3/13/2014	14:52	16:06	-	-	-	-	-	-	215	16	50.8	17.5	63.9
3/20/2014	14:32	15:30	-	-	-	-	-	-	205	17	51.6	18.6	63.8
3/28/2014	14:00	14:25	-	-	-	-	-	-	150			17	
4/3/2014	10:49	12:03	-	-	-	-	-	-	197.5	16.5	53.8	17.5	62.8
4/10/2014	10:35	11:50	-	-	-	-	-	-	210	16	55.1	18	61.6

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (°F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (°F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (°F)
4/24/2014	10:30	11:40	-	-	-	-	-	-	202	16	56.1	18	64.5
5/1/2014	9:00	10:05	-	-	-	-	-	-	215	15	59.1	18	65.3
5/30/2014	13:17	14:08	-	-	-	-	-	-	150	16	68.3	19	73.8
6/6/2014	10:10	11:10	-	-	-	-	-	-	215	105	67.4	19	75.2
6/18/2014	OFF	OFF	-	-	-	-	-	-					
6/24/2014	12:00	13:00	-	-	-	-	-	-					
7/3/2014	10:00	11:00	-	-	-	-	-	-	220	17	68.1	0	70.3
7/30/2014	22:00	23:00	-	-	-	-	-	-		15		0	71
8/5/2014	22:00	23:00	-	-	-	-	-	-				0	76.6
8/12/2014	22:00	23:00	-	-	-	-	-	-	75.2	14		0	
8/19/2014	22:00	23:00	-	-	-	-	-	-	71.7	13	79.6	0.5	70.4
8/29/2014	22:00	23:00	-	-	-	-	-	-	72.1	14	73.9	0	70.8
9/8/2014	22:00	23:00	-	-	-	-	-	-	69.7	14	69.2	0	70.3
9/12/2014	22:00	23:00	-	-	-	-	-	-	68	14	71.6	0	67.9
9/19/2014	22:00	23:00	-	-	-	-	-	-	66.9	14	71.6	0	
9/29/2014	22:00	23:00	-	-	-	-	-	-	64.8	4	64.1	0.5	68.8
10/6/2014	22:00	23:00	-	-	-	-	-	-	70	14	65.8	0.5	66.9
11/4/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	69.9	14	57.6	14	57.2
11/10/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	113	16.5	58.6	14	66.6
11/17/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	54.3	17	46.6	1	64.4
11/26/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	66.6	17	51.8	2	65.8
12/5/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.5	16	45.4	1	64.4
12/12/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	68.3	17	49.9	6	66.1
12/24/2014	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	48.8	14	114	17	66.1
1/9/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	58.2	17	45.5	1	66.1
1/16/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.6	17	46.8	1	64.9
1/23/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	57.5	17	46.9	1	65.6
1/30/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	61	17	48.8	1	65.8
2/5/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	58.4	17	50.6	1	66.4
2/13/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.4	17	51.7	1	65.8
2/20/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.2	17	55.4	1	66.2
2/27/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.2	17	52.3	1	66.1
3/6/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	67.6	17	53.7	2	63.5
3/13/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	68	17.5	54	3	64.3
3/20/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.2	17	60	0	65.2
3/27/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	67.9	17.5	56.9	6	62.6
4/3/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.3	17	63.2	6	65.5
4/10/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.1	17	63	5	65.2
4/17/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55.8	3	52.1	6	56.3
4/24/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	54.2	3	53.3	6	54.2
5/1/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.3	3	63.2	1	65.6
5/8/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	64.3	3	69.9	6	64.5
5/15/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	63.1	3			67.6
5/21/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	65.8	2.5	69.9	7	65.9

Table B-1: AS/SVE System Field Data

Date	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower ON TIME	AS Blower OFF Time	AS Blower Temp. (°F)	AS Blower Pressure (psi)	11574-ASW-1 Temp (°F)	11574-ASW-1 Pressure (psi)	11574-ASW-2 Temp. (°F)
5/29/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	68.2	5	68.2	1	68.4
6/5/2015	-	-	-	-	-	-	-	-	66.2	3	72.5	6	70.3
6/12/2015	-	-	-	-	-	-	-	-	66.2	1	68.6	7	66.8
6/18/2015	-	-	-	-	-	-	-	-	77.4	1	70.9	6	68.4
6/26/2015	-	-	-	-	-	-	-	-	77.4	1	75.2	6	78.7
7/10/2015	-	-	-	-	-	-	-	-	73.2	1	74.6	6	70
7/17/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
7/24/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/7/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/14/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/21/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/4/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/18/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
9/25/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/2/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/9/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/16/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/19/2015	-	-	-	-	-	-	-	-	-	-	-	-	-
10/23/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	55	0	68.8	7	62.3
10/30/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.4	19	58.9	10	70
11/6/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	113	22	57.4	14	68.3
11/13/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	110	22	66	14	68
11/19 - 11/23													
11/27/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	58.3	26	54.2	13	66.4
12/2/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.6	26	47.3	13	69.6
12/11/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	57.9	27	49.3	13	68.3
12/18/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	59.1	28	47.2	15	68.6
12/24/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	62.3	20	44.1	17	68
12/31/2015	6:00	6:30	12:00	12:30	18:00	18:30	0:00	0:30	77.5	29	39.8	14	68.5

Notes:

- = no data
ppb = parts per billion
°F = degrees fahrenheit
psi = pounds per square inch

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (°F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (°F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (°F)	11574-SVE-BE-1 VOCs (ppb)
5/11/2012			39	4		39	4			84
9/21/2012		19.6	60	4	28.4	60	4			76
9/28/2012		16.4	55	3	13.6	55	3	40.6	55	45
10/11/2012		17.3	60	2	14.5	60	2	42.3	60	37
10/19/2012		16.8	50	2	13.6	50	2	46.9	50	52
10/29/2012		15.4	57	2.5	12.8	57	2.5	54.2	57	77
11/5/2012		5.3	55	3	19.2	55	3		55	174
11/30/2012	14	21.7		4	31.3		4	48.4		0
1/17/2013	14	10.1		5	36.5		6	51		0
1/25/2013		24.2	57.8	5	27.8	52.7	5	48.1	70.7	0
2/8/2013	13	10.2		6	32.8		6	47.8	75.8	1159
2/15/2013	14	12.3			38.2			45.4	88.4	260
2/27/2013	12	25.1	55.6	4.5	34.2	56.3	6	45.7	75.3	163
3/8/2013	14	11.2	48.9	4	35.3	50.1	6	50.1	71.9	0
3/22/2013		24.8	55.7	5	29.9	55.3	6	54.7	81.3	1164
3/29/2013	13.5	15.2	50.8	3	28.7	47.6	6	54.3	86.6	3771
4/5/2013		17.1	55.6	4	34.4	55.8	6	49.8	63.7	2244
4/19/2013	13.5	14.3	57.9		31.1	57.6		53.5	71.6	923
6/28/2013	13	9.5	74.8	4	31	72	7	46	91.9	499
7/12/2013	12.5	12.5	70.3	4	40.8	68.1	6	54.5	97.3	1954
7/19/2013		10.8	75.1	4	31.9	72.9	8	51	108.8	240
8/2/2013		14.8		4	33.6		8	53.8		9708
8/15/2013	12.5	6.5	68.8	2	32.6	68.3	5	46.7	89.8	17000
8/23/2013		13.2	71.7	2	33.7	70.6	6	50.8	93.2	30800
9/13/2013	12.5	12.6	70.9	2	34.7	69	6	52		27400
10/4/2013	13	9.6	64.3	3	34.5	65.6	4	54.5	96.2	100000
10/10/2013	14	14.3	59.6	3	28.2	59.9	6	51	77.4	270
11/7/2013	13	13.5	54.6	4	32.1	56.4	4	56.8	73.7	1320
11/14/2013	13.5	25.4	57.5	8	22.5	56.3	6	48.5	79.6	
11/22/2013	13.2	13.4	48.5	6	22.9	51.2	6	49.9	65.8	2212
11/26/2013	13.9	30.5	54.5	5	22.8	53.3	5	48.6	74.6	1585
12/12/2013		22.5	43.3	5	26.2	47.2	4	44.8	67.5	1215
1/2/2014	13	27.6	53.4	3	25.8	51.7	4	40.3	78.1	1795
1/10/2014	13.5	11.3	46.9	4	31.7	51.4	4	44.8	75.3	847
1/16/2014	13	26.5	51.9	5	29.2	52.7	3	49.8	72.4	
1/23/2014	13	25.8	49.6	5	30.1	50.6	4	50.1	70	197
1/30/2014	13.5	21.5	46.8	3	35.1	47.3	5	49.7	55.8	2630
2/6/2014	13	26.9	41.6		29.6	45.3		50.1	63.7	1460
2/20/2014	14	27.2	46.4	4.5	30.4	48.8	4	47.4	72.6	67
3/13/2014	15	9.4	59.3	6	33	59.1	6	50.2	85.6	28
3/20/2014	14.5	15.4	55.4	4	33.1	55.1	5	51.2	84.1	290
3/28/2014		16.2		4	31.8		5	51		240
4/3/2014	14.5	25.3	58.1	4	25.5	57.3	4	54.4	78	167
4/10/2014	15	22.2	61.3	5	30.6	61.7	8	46.5	85.9	176

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (°F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (°F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (°F)	11574-SVE-BE-1 VOCs (ppb)
4/24/2014	14	31.3	56.9	3	33.7	56.6	5	53.2	79	46
5/1/2014	15	21.2	60.7	4	29.3	63.6	5	51.6	91.6	156
5/30/2014	14	13.7	70.8	3	35.6	66.5	5	55.1	103.5	72
6/6/2014	16	23.2	64.8	3	31.3	63.7	6	52.5	87.1	30
6/18/2014		7.9			36.2			55.4		62
6/24/2014		10.2	73.7	2	34.6	71.9	4	53.8	91.4	0
7/3/2014		24.5	67.4		28.9	66.3		47.3	89.1	70
7/30/2014	0	18.3	63.8		35.2	64.4	6	54.7	83.8	46
8/5/2014	0	11		0	30		7	48.5		50
8/12/2014	0	16.9			27.4			52.1		0
8/19/2014	0	12	76.5		31	76.5		47	112	0
8/29/2014	0	4.6	68.6	4	33.3	67.9	7.5	50.4	85.6	48
9/8/2014	0	12.2	69.3	4	34.8	69.3	7	51.6	89.8	0
9/12/2014	0	30.3	69.3	2	28.2	67.5	6	52.1	114.2	0
9/19/2014		24.1	76.3	2.5	33.1	72.6	6	51.7	106	0
9/29/2014	0	36.4	58.1	3	32.7	58.4	6.5	52	71.3	0
10/6/2014	1	24.6	76	1.5	36.2	70.3	6.5	51.6	99.5	0
11/4/2014	1	20.2	58.9	3.5	35.2	59.2	8	52.5	81.6	16
11/10/2014	1	30.7	57.6	3.5	36.1	57.8	8	51.2	88.3	1
11/17/2014	0	30.3	53.7	2.5	37.7	51.2	8	50.5	80	14
11/26/2014	2	33.3	57.6	2.5	36.2	58.8	7.5	51.9	81.7	78
12/5/2014	1	27.9	52.4	2.5	34.6	55.7	7.5	54.2	77	21
12/12/2014	5	24.4	56.5	2.5	36.5	57.6	8	55.4	86.6	24
12/24/2014	12	36.6	52.1	2.5	38	54.6	8	54.5	76.3	24
1/9/2015	1	23.9	52.3	2.5	36.8	54	8	53.2	79.6	12
1/16/2015	1	25.8	51.7	2.5	35.2	50.8	8	54	78.3	0
1/23/2015	0	23.1	52.7	4	35.2	55.1	8.5	56.5	73.9	0
1/30/2015	0	27.3	50.8	4.5	39.3	54.1	8.5	57	73.4	0
2/5/2015	1	26.2	56.5	4	36.2	56.9	8.5	51.2	74.5	0
2/13/2015	1	23.5	55.6	4	37.5	56.1	8.5	52.9	78.8	0
2/20/2015	1	22.4	54.3	4	35.4	54.5	8	50.5	79.2	0
2/27/2015	0	27.3	47.8	4	36.2	47.9	8	51.9	72.3	0
3/6/2015	0	8.6	58.9	4	41.6	57.9	8	53.8	88.7	0
3/13/2015	0	10.1	63.7	3	38.3	62.6	7	52.8	88.4	0
3/20/2015	0	27.2	59.2	3	34.5	61	7	51.5	81	0
3/27/2015	0	7.7	72.1	2	34.4	69.6	8	52	82	0
4/3/2015	7	26.3	55.8	4.5	35.3	57.2	8.5	51.7	78.7	0
4/10/2015	7	27	55.2	4.5	35.4	56.3	8.5	51	77.2	0
4/17/2015	7	25.8	63.6	3.5	35.5	60.6	8	52.4	78.4	0
4/24/2015	7	23.9	50.3	4	36.7	51.8	8	51.9	70.3	20
5/1/2015	7	25.4	70.1	4	35.6	68.4	8	55.4	92.8	26
5/8/2015	7	21.3	68.6	4	35	67.5	8	53.7	108.6	29
5/15/2015	6	14.6	67.8	7	41.7	67.6	8	55.2	105.1	0
5/21/2015	7	10.5	80.6	4	41.5	75.9	6.5	55.2	118.1	4

Table B-1: AS/SVE System Field Data

Date	11574-ASW-2 Pressure (psi)	11574-SVE-BS-1 Flow (m/s)	11574-SVE-BS-1 Temp. (°F)	11574-SVE-BS-1 Pressure (psi)	11574-SVE-BS-2 Flow (m/s)	11574-SVE-BS-2 Temp. (°F)	11574-SVE-BS-2 Pressure (psi)	11574-SVE-BE-1 Flow (m/s)	11574-SVE-BE-1 Temp. (°F)	11574-SVE-BE-1 VOCs (ppb)
5/29/2015	7	23.7	80	4	32.2	78.3	8	50.2	105	41
6/5/2015	7	23.6	83.2	3	33.8	83.3	7	53.4	94.1	2
6/12/2015	1	25.2	65.3	4	36.1	66.1	8	52.3	87.2	95
6/18/2015	1	23	77.6	4	31.5	76.5	8	51.3	97.8	30
6/26/2015	1	22.3	93.4	4	33.1	92.1	8	52.3	105	76
7/10/2015	7	21.5	72.7	3	33.5	72.7	7	40	96.1	0
7/17/2015	-	13.6	87.4	1.5	30.1	85.9	5.5	41.6	90	0
7/24/2015	-	18.5	76.2	3	30.1	76.2	6	44.3	96.3	32
7/31/2015	-	25.3	96.2	3	33.2	98.2	6	44	105	0
8/7/2015	-	23	92.6	6	31	91.7	3	46	97.3	0
8/14/2015	-	21.3	65	6	31.7	65	3	43	109	0
8/21/2015	-	23	69.2	3	30.3	69.7	5.5	45.3	89.7	0
8/28/2015	-	17.1	77.6	1.7	30.4	76.1	5.5	37.4	118.9	0
9/4/2015	-	20.2	69.6	3	26.8	69.6	6	48.2	90	0
9/11/2015	-	15.5	75.5	2	27.2	75.9	5	40.2	129	0
9/18/2015	-	15.7	75.1	3.5	29.4	74.9	5	45.3	103.1	0
9/25/2015	-	22.5	66.1	3	25.1	67.3	5	46	90.3	0
10/2/2015	-	22.4	63.3	3	25.2	65.2	5	43.5	100.2	0
10/9/2015	-	20	64.5	3	26	64.5	5	44.7	87.9	92
10/16/2015	-	23.2	67.5	3	27.3	66.2	5	44.3	98	75
10/19/2015	-									
10/23/2015	6.5	22.5	60.3	3	29.8	61.8	5.5	49.4	114	2
10/30/2015	9	23.3	65.5	3	28.2	65.1	5	42	86.3	350
11/6/2015	12	25.1	62.7	4	26.1	62.4	6	45.8	100.9	300
11/13/2015	12	23.2	62.5	3	26.1	62.7	5	44	109	0
11/19 - 11/23										
11/27/2015	14	22.3	50	3	25.1	50.2	5	42.5	85	0
12/2/2015	12.5	21.2	54.5	2.5	25.3	57.2	5.5	42.8	84.5	0
12/11/2015	12	8.3	48.9	2.5	27.8	52.8	12	42.5	80	0
12/18/2015	12.5	5.9	49.4	4	31.2	55.1	5.5	42.5	86.9	0
12/24/2015	12	14.4		8	30.5		8	42.2		0
12/31/2015	12	4.8	50	3	21.5	52	6	43.1	86.8	0

Notes:

- = no data
ppb = parts per billion
°F = degrees fahrenheit
psi = pounds per square inch

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
5/11/2012	0.0005	0.02	0.035	0.03		Ran blower for 1 hour
9/21/2012	0.025	0.025	0.03	0.02	0.05	Ran blower for 1 hour
9/28/2012	0.02	0.025	0.025	0.05	0.05	Ran blower for 1 hour
10/11/2012	0.05	0.025	0.025	0.05	0.05	Ran blower for 1 hour
10/19/2012	0.05	0.025	0.025	0.05		Ran blower for 1 hour
10/29/2012	0.05	0.025	0.02	0.05		Ran blower for 1 hour
11/5/2012	0.05	0.025	0.025	0.05	0.05	Ran blower for 1 hour
11/30/2012	0.09	0.07	0.03	0.04	0.02	Windy conditions prbably account for higher pressure at south side of building
1/17/2013	0.035	0.03	0.04	0.02	0.02	
1/25/2013	0.032	0.03	0.04	0.025		
2/8/2013						
2/15/2013	0.026	0.03	0.035	0.025	0.02	
2/27/2013	0.035	0.03	0.04	0.035	0.025	
3/8/2013	0.025	0.04	0.03	0.025	0.02	
3/22/2013	0.015	0.015	0.03	0.02	0.015	
3/29/2013	0.015	0.015	0.03	0.025	0.02	
4/5/2013	0.035	0.04	0.035	0.035		
4/19/2013	0.045	0.03	0.05	0.035	0.02	
6/28/2013	0.02	0.01	0.02	0.02	0.02	
7/12/2013	0.015	0.015	0.025	0.02	0.02	
7/19/2013	0.02	0.015	0.02	0.02		
8/2/2013	0.02	0.015	0.02	0.02		
8/15/2013	0.022	0.025	0.03	0.035	0.025	
8/23/2013	0.02	0.025	0.03	0.03		
9/13/2013	0.025	0.025	0.03	0.035	0.02	
10/4/2013	0.015	0.02	0.025	0.02	0.02	
10/10/2013	0.01	0.025	0.025	0.02	0.02	Brief operation. Need new drum gasket.
11/7/2013	0.02	0.035	0.02	0.02	0.02	
11/14/2013	0.01	0.01	0.015	0.01	0.015	
11/22/2013	0.025	0.02	0.032	0.03	0.01	
11/26/2013	0.01	0.01	0.015	0.02	0.01	
12/12/2013	0.02	0.02	0.025	0.025	0.01	
1/2/2014	0.02	0.02	0.025	0.02	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
1/10/2014	0.02	0.02	0.02	0.025	0.01	Isolated SVE zones. Drained KO drum (full). Isoated zones and drained again (approx. half full).
1/16/2014	0.02	0.02	0.04	0.035	0.01	SVE zones isolated 2 min each. KO drum drained ~ 10 min. SVE zones isolated ~ 10 min each. KO drum drained ~ 3 min.
1/23/2014	0.025	0.02	0.03	0.025	0.015	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
1/30/2014	0.045	0.05	0.025	0.03	0.015	Isolated SVE zones. Drained KO drum 2x for ~ 5.5 min (full) ~ 2 min.
2/6/2014	0.01	0.01	0.02	0.02	0.01	
2/20/2014						Wind conditions effecting SSD readings.
3/13/2014	0.015	0.02	0.02	0.02	0.015	Plug popped out / not tight at MW 10A17-8. Bubbling sparged water. Reinstalled/tightened plug.
3/20/2014	0.015	0.015	0.03	0.022	0.02	
3/28/2014	0.02	0.02	0.03	0.025		
4/3/2014	0.02	0.02	0.02	0.025	0.015	
4/10/2014	0.015	0.01	0.025	0.02	0.01	

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
4/24/2014	0.02	0.02	0.03	0.025	0.01	
5/1/2014	0.01	0.015	0.02	0.02	0.01	
5/30/2014	0.015	0.015	0.025	0.035	0.02	
6/6/2014	0.015	0.015	0.02	0.02	0.01	
6/18/2014						SVE exhaust samples - 2 Tedlar bags.
6/24/2014	0.015	0.015	0.025	0.025	0.02	SVE exhaust samples - 4 Tedlar bags; 1 each hour from 11:00 - 14:00.
7/3/2014	0.015	0.015	0.02	0.025	0.01	
7/30/2014	0.025	0.025	0.03	0.03	0.02	Blower timer set to turn on at 10 PM and shutoff at 11:00 PM.
8/5/2014	0.035	0.035	0.03	0.035	0.02	Both blower suction pressure guages not working properly.
8/12/2014	0.03	0.02	0.025	0.025	0.015	Thermometer broken; replace pressure guages on suction lines with pressure cap.
8/19/2014	0.02	0.035	0.03	0.025	0.02	
8/29/2014	0.015	0.025	0.03	0.025	0.025	
9/8/2014	0.03	0.02	0.04	0.03	0.015	
9/12/2014	0.02	0.02	0.03	0.03	0.02	
9/19/2014	0.01	0.015	0.03	0.02		
9/29/2014	0.03	0.03	0.03	0.035	0.015	
10/6/2014	0.02	0.02	0.025	0.035	0.015	Changed sparging frequency to 4 times daily.
11/4/2014	0.03	0.03	0.035	0.035	0.01	Collecting 4 tedlar bag samples and 1 duplicate.
11/10/2014	0.015	0.01	0.035	0.035	0.015	
11/17/2014	0.025	0.025	0.03	0.035	0.01	VOCs around ACU higher than normal ~10-20 ppb.
11/26/2014	0.03	0.03	0.03	0.03	0.015	
12/5/2014	0.025	0.025	0.03	0.035	0.01	
12/12/2014	0.03	0.025	0.03	0.03	0.015	
12/24/2014	0.025	0.03	0.03	0.035	0.015	
1/9/2015	0.025	0.025	0.03	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
1/16/2015	0.025	0.025	0.03	0.03	0.01	
1/23/2015	0.025	0.025	0.03	0.03	0.01	
1/30/2015	0.025	0.025	0.03	0.03	0.01	
2/5/2015	0.025	0.025	0.03	0.035	0.01	
2/13/2015	0.025	0.025	0.03	0.03	0.01	
2/20/2015	0.02	0.02	0.03	0.03	0.015	
2/27/2015	0.03	0.03	0.03	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
3/6/2015	0.028	0.02	0.025	0.04	0.015	
3/13/2015	0.025	0.03	0.035	0.025	0.015	Reset AS Blower timer to standard time (ahead 1 hour last week) 9:59 to 10:59. ASW-1 pressure guage stuck. Opened ball valve - no pressure.
3/20/2015	0.025	0.025	0.03	0.03	0.01	
3/27/2015	0.02	0.055	0.025	0.025	0.015	
4/3/2015	0.03	0.04	0.04	0.04	0.01	
4/10/2015	0.025	0.025	0.03	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
4/17/2015	0.025	0.025	0.035	0.03	0.01	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
4/24/2015	0.025	0.025	0.03	0.03	0.01	6-10 ppb @ first parking stall next to SVE shed. System was off 4/23/2015 8-12:00 for groundwater sampling event.
5/1/2015	0.025	0.025	0.03	0.035	0.01	5-6 ppb @ first parking stall next to SVE shed. Drained KO drum.
5/8/2015	0.02	0.015	0.04	0.05	0.02	
5/15/2015	0.02	0.04	0.04	0.04		ACU tellers too busy to escort inside. No readings for SSD-3 or ASW-1.
5/21/2015	0.02	0.02	0.025	0.025	0.015	2-7 ppb at third parking bay from SVE Shed. 25 ppb near AAFES @ air dispenser.

Table B-2: Sub-Slab Pressures

Date	SSD-S1 (SE) (in. WC)	SSD-S2 (SW) (in. WC)	SSD-N1 (NE) (in. WC)	SSD-N2 (NW) (in. WC)	SSD-3 (inside) (in. WC)	COMMENTS
5/29/2015	0.02	0.025	0.03	0.035	0.015	
6/5/2015	0.02	0.015	0.03	0.03	0.015	Air sparge blower malfunction discovered 6/4/2015. Possible motor failure. SVE functioning.
6/12/2015	0.02	0.025	0.02	0.03	0.03	Air sparge blower offline due to malfunction. Repair in progress.
6/18/2015	0.02	0.02	0.025	0.025	0.01	
6/26/2015	0.02	0.02	0.03	0.035	0.015	~30 ppb @ first parking stall next to SVE shed.
7/10/2015	0.02	0.03	0.03	0.03	0.015	Blower is off for repairs.
7/17/2015	0.02	0.02	0.02	0.03	0.01	ASW readings not taken due to compressor malfuncation.
7/24/2015	0.02	0.02	0.025	0.03	0.01	GAC pressure @ 21 in WC.
7/31/2015	0.02	0.02	0.02	0.025	0.01	GAC in connected.
8/7/2015	0.02	0.02	0.02	0.02	0.01	3 ppb @ first parking stall next to SVE shed. Sparge blower is off for repair.
8/14/2015	0.05	0.035	0.035	0.035	0.01	Sparge blower is off
8/21/2015	0.025	0.02	0.015	0.03	0.01	Sparge blower is off
8/28/2015	0.025	0.025	0.028	0.02	0.015	Sparge blower is off
9/4/2015	0.02	0.02	0.025	0.02	0.01	Sparge blower is off
9/11/2015	0.025	0.02	0.04	0.03	0.015	0 ppb @ GAC inlet.
9/18/2015	0.02	0.025	0.03	0.025	0.015	32 ppb @ GAC inlet.
9/25/2015	0.01	0.02	0.025	0.03	0.015	0 ppb @ GAC inlet.
10/2/2015	0.02	0.02	0.025	0.03	0.015	0 ppb @ GAC inlet.
10/9/2015	0.025	0.02	0.02	0.02	0.01	Sparge blower is off
10/16/2015	0.02	0.02	0.02	0.02	0.01	
10/19/2015						Blue Mountain Mechanical installed new AS compressor and motor. Operated for ~30 min then On/Off cycles to test auto timer.
10/23/2015	0.02	0.02	0.03	0.02	0.015	254 ppb @ GAC inlet. Discovered power to AS Blower off. Sitched on and checked/verified timer settings.
10/30/2015	0.03	0.03	0.03	0.035	0.01	8-30 ppb at first parking stall next to SVE shed.
11/6/2015	0.03	0.025	0.02	0.02	0.01	~2 ppb at first parking stall next to SVE shed. Drained KO drum.
11/13/2015	0.03	0.03	0.03	0.03	0.015	Drained KO Drum ~5 min. Isolated SVE zones 5 min each. Drained drum again ~ 5 min.
11/19 - 11/23						Discovered SVE blower line fallen off. Blower tripped. Rebuilt line and restarted. AS Blower off until integrity of SVE blower verified. 11/20/2015 restarted SVE blower.
11/27/2015	0.015	0.015	0.015	0.015	0.01	
12/2/2015	0.025	0.025	0.038	0.037	0.015	0-10 ppb at first parking stall next to SVE shed.
12/11/2015	0.015	0.012	0.02	0.018	0.015	9 ppb @ GAC inlet. Drained KO drum.
12/18/2015	0.015	0.015	0.02	0.015	0.01	67 ppb @ GAC inlet. Drained KO drum.
12/24/2015	0.025	0.02	0.02	0.02	0.015	
12/31/2015	0.01	0.015	0.015	0.015	0.01	5 ppb @ GAC inlet.

Notes:
in W.C - inches of water column

APPENDIX C

GROUNDWATER MONITORING DATA

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95 A17-1	1-Aug-95	30.49	204.77	-	-	-	-	-
236.9	1-Feb-96	24.21	211.05	-	-	-	-	-
	1-Sep-96	28.2	207.06	-	-	-	-	-
	1-Mar-97	22.8	212.46	-	-	-	-	-
	1-Aug-97	26.4	208.86	-	-	-	-	-
	1-Mar-98	24.06	211.2	-	-	-	-	-
	1-Sep-98	29.2	206.06	-	-	-	-	-
	1-Mar-99	21.1	214.16	-	-	-	-	-
	1-Aug-99	27.01	208.25	-	-	-	-	-
	1-Mar-00	23.93	211.33	-	-	-	-	-
	1-Sep-00	28.99	206.27	-	-	-	-	-
	1-Mar-01	29.51	205.75	-	-	-	-	-
	1-Aug-02	29.6	205.66	-	-	-	-	-
	28-Oct-03	30.11	205.15	-	-	-	-	-
	20-Oct-04	30.94	204.32	-	-	-	-	-
	9-Nov-05	30.51	204.75	-	-	-	-	-
	14-Jun-07	26.33	208.93	-	-	-	-	-
	21-Mar-08	26.33	208.93	-	-	-	-	-
	8-Aug-08	29.78	205.48	-	-	-	-	-
	9-Mar-09	27.57	207.69	-	-	-	-	-
	25-Aug-09	29.87	207.03	-	-	-	-	-
	22-Feb-10	26.1	210.8	-	-	-	-	-
	24-Aug-10	28.6	208.3	-	-	-	-	-
	24-Feb-11	25.1	211.8	-	-	-	-	-
	9-Sep-11	Could Not Locate						
	14-Mar-12	25.5	211.4	-	-	-	-	-
	16-Aug-12	27.9	209	-	-	-	-	-
	21-Feb-13	24.28	212.62	-	-	-	-	-
	13-Aug-13	28.8	208.1	-	-	-	-	-
	10-Mar-14	23.6	213.3	-	-	-	-	-
	22-Sep-14	28.67	208.23	-	-	-	-	-
	21-Apr-15	25.37	211.53	-	-	-	-	-
	1-Sep-15	29.43	207.47	-	-	-	-	-
95 A17-2	1-Aug-95	30.2	204.59	-	-	-	-	-
235.9	1-Feb-96	24.24	210.55	-	-	-	-	-
	1-Sep-96	27.71	207.08	-	-	-	-	-
	1-Mar-97	22.34	212.45	-	-	-	-	-
	1-Aug-97	26.08	208.71	-	-	-	-	-
	1-Mar-98	23.82	210.97	-	-	-	-	-
	1-Sep-98	28.7	206.09	-	-	-	-	-
	1-Mar-99	20.6	214.19	-	-	-	-	-
	1-Aug-99	26.55	208.24	-	-	-	-	-
	1-Mar-00	23.49	211.30	-	-	-	-	-
	1-Sep-00	28.51	206.28	-	-	-	-	-
	1-Mar-01	29.09	205.70	-	-	-	-	-
	1-Aug-02	28.92	205.87	-	-	-	-	-
	28-Oct-03	29.65	205.14	-	-	-	-	-
	28-Apr-04	27.97	206.82	-	-	-	-	-

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95 A17-2	20-Oct-04	30.47	204.32	-	-	-	-	-
Cont.	9-Nov-05	30	204.79	-	-	-	-	-
	31-Oct-06	30.38	204.41	6.89	0.155	-	-	13.30
	14-Jun-07	26.03	208.76	6.90	0.153	-	-	13.30
	21-Nov-07	28.82	205.97	6.06	0.107	-	-	13.30
	21-Mar-08	26.02	208.77	7.32	0.139	-	-	12.43
	8-Aug-08	29.37	205.42	7.19	0.114	1.45	195.33	12.57
	9-Mar-09	27.21	207.58	7.24	0.124	0.62	148.75	13.33
	25-Aug-09	29.49	206.41	6.66	0.106	0.76	252.00	13.10
	22-Feb-10	25.5	210.40	-*	-	-	-	-
	24-Aug-10	27.82	208.08	-*	-	-	-	-
	24-Feb-11	24.4	211.50	5.48*	0.126	3.06	-	12.80
	9-Sep-11	27.25	208.65	6.27	0.111	3.60	230.00	16.00
	14-Mar-12	24.73	211.17	-	-	5.96	26.00	11.20
	16-Aug-12	27.03	208.87	-	-	-	-	-
	21-Feb-13	25.37	210.53	7.45	-	5.07	23.00	13.20
	13-Aug-13	28.4	207.50	6.60	0.176	0.47	24.00	13.60
	10-Mar-14	Low Water Level, Unable to Collect Sample						
	22-Sep-14	27.7	208.20	6.50	0.147	5.90	173.00	17.20
	23-Apr-15	24.56	211.34	6.26	0.191	8.30	206	14.71
	1-Sep-15	28.38	207.52	6.49	0.196	9.40	125	16.83
95 A17-3a	1-Aug-95	30.41	204.81	-	-	-	-	-
235.9	1-Feb-96	24.65	210.57	-	-	-	-	-
	1-Sep-96	28.06	207.16	-	-	-	-	-
	1-Mar-97	22.31	212.91	-	-	-	-	-
	1-Aug-97	26.1	209.12	-	-	-	-	-
	1-Mar-98	23.51	211.71	-	-	-	-	-
	1-Sep-98	28.7	206.52	-	-	-	-	-
	1-Mar-99	20	215.22	-	-	-	-	-
	1-Aug-99	26.44	208.78	-	-	-	-	-
	1-Mar-00	23.16	212.06	-	-	-	-	-
	1-Sep-00	28.54	206.68	-	-	-	-	-
	1-Mar-01	29.51	205.71	-	-	-	-	-
	1-Aug-02	29.14	206.08	-	-	-	-	-
	30-Jun-03	28.94	206.28	-	-	-	-	-
	28-Oct-03	29.85	205.37	-	-	-	-	-
	28-Apr-04	28.06	207.16	-	-	-	-	-
	20-Oct-04	30.88	204.34	-	-	-	-	-
	24-May-05	28.75	206.47	-	-	-	-	-
	9-Nov-05	30.32	204.90	-	-	-	-	-
	14-Jun-06	26.99	208.23	-	-	-	-	-
	31-Oct-06	30.86	204.36	6.49	0.253	-	-	12.60
	14-Jun-07	26.09	209.13	6.51	0.252	-	-	12.60
	21-Nov-07	29.21	206.01	6.05	0.205	-	-	13.00
	21-Mar-08	26	209.22	7.35	0.237	0.70	-	12.37
	8-Aug-08	29.42	205.80	7.16	0.214	0.97	-25.75	12.28

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
95 A17-3a Cont.	9-Mar-09	27.07	208.15	7.04	0.227	0.71	-177.00	12.88
	25-Aug-09	29.46	206.44	6.03	0.199	0.77	233.00	13.10
	22-Feb-10	25.6	210.30	6.52	0.205	0.47	-196.00	12.80
	23-Aug-10	29.1	206.80	4.80	0.200	1.17	-125.00	13.10
	24-Feb-11	24.55	211.35	5.86	0.191	0.73	-	13.00
	9-Sep-11	27.62	208.28	6.07	0.177	4.87	-98.00	14.40
	14-Mar-12	24.85	211.05	-	-	-	-	-
	16-Aug-12	27.47	208.43	-	-	-	-	-
	21-Feb-13	25.66	210.24	-	-	-	-	-
	13-Aug-13	27.85	208.05	-	-	-	-	-
	14-Mar-14	22.9	213.00	6.36	0.223	7.70	26.00	13.60
	23-Sep-14	28.07	207.83	6.30	0.147	2.90	42.00	14.70
	22-Apr-15	24.96	210.94	6.5	0.329	5.20	0	14.5
	2-Sep-15	28.96	206.94	6.57	0.403	0.0	-56	15.50
95 A17-4 236.8	1-Aug-95	29.91	205.24	-	-	-	-	-
	1-Feb-96	23.65	211.50	-	-	-	-	-
	1-Sep-96	27.56	207.59	-	-	-	-	-
	1-Mar-97	21.75	213.40	-	-	-	-	-
	1-Aug-97	25.85	209.30	-	-	-	-	-
	1-Mar-98	23.35	211.80	-	-	-	-	-
	1-Sep-98	28.7	206.45	-	-	-	-	-
	1-Mar-99	19.7	215.45	-	-	-	-	-
	1-Aug-99	26.33	208.82	-	-	-	-	-
	1-Mar-00	22.93	212.22	-	-	-	-	-
	1-Sep-00	28.1	207.05	-	-	-	-	-
	1-Mar-01	29.05	206.10	-	-	-	-	-
	1-Aug-02	29.04	206.11	-	-	-	-	-
	28-Oct-03	29.51	205.64	-	-	-	-	-
	20-Oct-04	30.5	204.65	-	-	-	-	-
	9-Nov-05	29.8	205.35	-	-	-	-	-
	14-Jun-07	25.72	209.43	-	-	-	-	-
	21-Mar-08	25.77	209.38	6.15	0.13	-	-	14.37
	8-Aug-08	29.31	205.84	7.15	0.14	6.81	130.00	12.00
	9-Mar-09	26.91	208.24	7.12	0.14	7.03	228.25	13.83
	25-Aug-09	29.32	207.48	-	-	-	-	-
	21-Feb-10	25.38	211.42	5.95	0.14	4.97	285.00	13.30
	24-Aug-10	27.95	208.85	-	-	-	-	-
	24-Feb-11	24.37	212.43	6.01	0.14	6.91	-	13.30
	9-Sep-11	27.45	209.35	6.09	0.13	5.90	353.00	14.30
	14-Mar-12	24.89	211.91	-	-	6.36	26.00	11.20
	16-Aug-12	27.29	209.51	-	-	-	-	-
	21-Feb-13	25.49	211.31	6.69	-	6.47	-146.00	13.50
	13-Aug-13	27.85	208.95	-	-	-	-	-
	14-Mar-14	22.5	214.30	6.26	0.18	8.55	32.00	13.50
	23-Sep-14	27.99	208.81	-	-	-	-	-
	22-Apr-15	24.76	212.04	6.31	0.18	9.4	206	14.4
	1-Sep-15	28.82	207.98	-	-	-	-	-

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
96 A17-5	1-Feb-96	22.44	211.14	-	-	-	-	-
233.9	1-Sep-96	26.2	207.38	-	-	-	-	-
	1-Mar-97	20.75	212.83	-	-	-	-	-
	1-Aug-97	24.6	208.98	-	-	-	-	-
	1-Mar-98	22.25	211.33	-	-	-	-	-
	1-Sep-98	27.3	206.28	-	-	-	-	-
	1-Mar-99	18.9	214.68	-	-	-	-	-
	1-Aug-99	25.05	208.53	-	-	-	-	-
	1-Mar-00	21.92	211.66	-	-	-	-	-
	1-Sep-00	27.07	206.51	-	-	-	-	-
	1-Mar-01	27.76	205.82	-	-	-	-	-
	1-Aug-02	27.68	205.90	-	-	-	-	-
	28-Oct-03	28.3	205.28	-	-	-	-	-
	9-Nov-05	28.47	205.11	-	-	-	-	-
	14-Jun-07	24.47	209.11	-	-	-	-	-
	21-Mar-08	24.48	209.10	-	-	-	-	-
	8-Aug-08	27.93	205.65	-	-	-	-	-
	9-Mar-09	25.71	207.87	-	-	-	-	-
	25-Aug-09	28.03	205.87	-	-	-	-	-
	21-Feb-10	24.29	209.61	-	-	-	-	-
	24-Aug-10	26.66	207.24	-	-	-	-	-
	24-Feb-11	23.26	210.64	-	-	-	-	-
	9-Sep-11	26.15	207.75	-	-	-	-	-
	14-Mar-12	25.7	208.20	-	-	-	-	-
	16-Aug-12	26.01	207.89	-	-	-	-	-
	21-Feb-13	24.28	209.62	-	-	-	-	-
	13-Aug-13	26.93	206.97	-	-	-	-	-
	10-Mar-14	21.85	212.05	-	-	-	-	-
	23-Sep-14	26.66	207.24	-	-	-	-	-
	21-Apr-15	23.57	210.33	-	-	-	-	-
	1-Sep-15	27.51	206.39	-	-	-	-	-
96 A17-6	1-Feb-96	22.95	209.66	-	-	-	-	-
235.1	1-Mar-01	28.18	204.43	-	-	-	-	-
	28-Oct-03	27.25	205.36	-	-	-	-	-
	9-Nov-05	27.41	205.20	-	-	-	-	-
	14-Jun-07	23.41	209.20	-	-	-	-	-
	21-Mar-08	23.43	209.18	-	-	-	-	-
	8-Aug-08	26.91	205.70	-	-	-	-	-
	9-Mar-09	24.62	207.99	-	-	-	-	-
	25-Aug-09	26.98	208.12	-	-	-	-	-
	21-Feb-10	23.2	211.90	-	-	-	-	-
	24-Aug-10	25.5	209.60	-	-	-	-	-
	25-Feb-11	22.14	212.96	-	-	-	-	-
	9-Sep-11	25.11	209.99	-	-	-	-	-
	14-Mar-12	22.56	212.54	-	-	-	-	-
	16-Aug-12	24.93	210.17	-	-	-	-	-
	21-Feb-13	23.2	211.90	-	-	-	-	-
	13-Aug-13	25.85	209.25	-	-	-	-	-

Table C-1. AOC 9-2 Depth to Water and Groundwater Parameter Measurements (continued)

Well ID TOC Elevation	Date	DTW (ft btoc)	GWELEV (ft AMSL)	pH	Cond. (µS/cm)	DO (ppm)	ORP (mv)	Temp ºC
96 A17-6	10-Mar-14	20.6	214.50	-	-	-	-	-
Cont.	23-Sep-14	26.59	208.51	-	-	-	-	-
	21-Apr-15	22.48	212.62	-	-	-	-	-
	1-Sep-15	28.5	206.60	-	-	-	-	-
07 A17-7	16-Nov-07	27.85	206.20	7.27	0.170	-	-	12.80
233.2	26-Mar-08	24.88	209.17	7.18	0.138	0.79	38.33	12.67
	26-Aug-08	28.33	205.72	7.25	0.161	0.35	-158.25	12.85
	3-Mar-09	26.09	207.96	-	-	-	-	-
	25-Aug-09	28.46	204.74	6.70	0.132	0.23	172	13.20
	21-Feb-10	24.30	208.90	5.82	0.067	0.24	131	11.9
	24-Aug-10	26.71	206.49	5.64	0.132	0.37	76	14.1
	24-Feb-11	23.20	210.00	5.24	0.038	5.66	-	10.6
	9-Sep-11	26.20	207.00	6.05	0.125	1.82	243	16.5
	14-Mar-12	23.63	209.57	-	-	6.8	26	9.5
	16-Aug-12	26.02	207.18	7.34	-	1.06	28	18.6
	21-Feb-13	24.28	208.92	7.48	-	2.49	22	9.9
	13-Aug-13	27.00	206.20	5.97	0.099	0.59	57	13.3
	14-Mar-14	21.45	211.75	5.97	0.059	6.3	46	11.6
	23-Sep-14	26.74	206.46	6.2	0.101	2	2	14
	22-Apr-15	23.60	209.60	6.17	0.130	4.9	28	12.8
	2-Sep-15	27.46	205.74	6.55	0.180	0.0	49	14.85
10-A17-8	29-Nov-10	26.87	208.93	-	-	-	-	-
235.8	25-Feb-11	24.30	211.50	-	-	-	-	-
	9-Sep-11	26.68	209.12	5.82	0.208	1.99	230	16
	18-Nov-11	29.00	206.80	-	-	-	-	-
	14-Mar-12	24.81	210.99	-	-	-	-	-
	16-Aug-12	27.18	208.62	-	-	-	-	-
	21-Feb-13	25.53	210.27	-	-	-	-	-
	13-Aug-13	28.02	207.78	6.6	0.176	0.48	24	13.6
	10-Mar-14	22.85	212.95	6.01	-	2	47	14.7
	22-Sep-14	27.13	208.67	6.4	0.159	4.4	-21	18.9
Duplicate	22-Sep-14	27.13	208.67	6.4	0.159	4.4	-21	18.9
	22-Apr-15	24.72	211.08	6.43	0.297	4.53	-11	17.3
Duplicate	22-Apr-15	24.72	211.08	6.43	0.297	4.53	-11	17.3
	1-Sep-15	28.39	207.41	6.31	0.371	3.40	-35	19.54
Duplicate	1-Sep-15	28.39	207.41	6.31	0.371	3.40	-35	19.54

Notes:

TOC – Top of casing
DTW (ft btoc) – Depth to water (feet below top of casing). Static DTW collected prior to purging beginning in 2015
GWELEV (ft AMSL) – Groundwater elevation (feet above mean sea level)
Cond. (µS/cm) – Conductivity (microsiemens per centimeter)
DO (ppm) – Dissolved oxygen (parts per million)
ORP (mv) – Oxygen / reduction potential (millivolts)
Temp. (ºC) – Temperature (degrees Celsius)
- – No data, not applicable
* – Pump is broken and caught in well. Well casing is possibly bent. Sample collected using a disposable bailer.

New TOC elevations surveyed on 11 June 2010 were used beginning with August 2009 data

Table C-2. Results of Groundwater Sampling for TPH-G and BTEX Concentrations

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)
95-A17-1	28-Oct-03	100U	0.5U	0.5U	0.5U	1U
	20-Oct-04	100U	1U	1U	1U	3U
	9-Nov-05	100U	1U	1U	1U	3U
95-A17-2	28-Oct-03	4,700	**1.6**	**2.9**	**102**	**184**
	28-Apr-04	200U	**1**	1U	**1**	3U
	20-Oct-04	**760**	**1**	1U	**18**	**2**
	9-Nov-05	1,900	1U	**2**	**54**	**67**
	31-Oct-06	100U	1U	1U	1U	3U
	14-Jun-07	500U	1U	1U	1U	3U
	7-Nov-07	3,000	1U	**1**	**12**	**12**
	8-Mar-08	500U	1U	1U	1U	3U
	26-Aug-08	500U	1U	1U	1U	3U
	9-Mar-09	500U	1U	1U	1U	3U
	25-Aug-09	500U	1U	1U	1U	3U
	26-Mar-10	50U	1U	1U	1U	3U
	24-Aug-10	No Sample Collected				
	24-Feb-11	50U	1U	1U	1U	3U
	9-Sep-11	50U	1U	1U	1U	3U
	14-Mar-12	50U	1U	1U	1U	2U
	16-Aug-12	50U	1U	1U	1U	2U
	21-Feb-13	250U	0.20U	0.20U	0.20U	0.40U
	13-Aug-13	No Sample Collected				
	10-Mar-14	No Sample Collected				
	22-Sep-14	250U	0.5U	**0.080J**	0.5U	0.5U
	23-Apr-15	25U	0.1U	0.1U	0.1U	0.2U
	1-Sep-15	48J	0.1U	0.08J	0.07J	0.37J
95-A17-3a	30-Jun-03	32,000	690	1,200	1,100	4,800
	28-Oct-03	10,400	200	**270**	**270**	1,200
	28-Apr-04	23,000	600	**800**	780	3,500
	20-Oct-04	8,200	160	**100**	**310**	**740**
	24-May-05	25,000	630	**650**	810	3,400
	9-Nov-05	6,000	220	**170**	**280**	**940**
	14-Jun-06	29,000	490	**500**	840	4,000
	31-Oct-06	26,000	590	**380**	840	3,000
	14-Jun-07	30,000	310	**360**	**610**	2,700
	7-Nov-07	30,000	360	**270**	730	2,700
	8-Mar-08	35,000	410	**400**	870	3,600
	26-Aug-08	17,700	175	**162**	**517**	1,819
	9-Mar-09	31,200	399	**335**	772	2,762
	25-Aug-09	27,300	209	**245**	**629**	2,370
	22-Feb-10	25,000	320	**390**	**990**	3,650
	24-Aug-10*	1,300	73	**12**	**42**	**24**
	24-Feb-11	27,000	270	**350**	1,100	3,970
	9-Sep-11	13,000	140	**110**	**480**	1,620
	14-Mar-12	8,700	91	**170**	**350**	**330**
	16-Aug-12	16,000	110	**240**	**610**	2,440
	21-Feb-13	20,000	75	**190**	**480**	1,880
	13-Aug-13**	21,000	92	**460**	**460**	2,100

Table C-2. Results of Groundwater Sampling for TPH-G and BTEX Concentrations (continued)

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)
95-A17-3a	14-Mar-14	15,000	36	100	230	1,210
Cont.	23-Sep-14	1,400	3.7	15	16	216
	22-Apr-15	1,500	21	25	33	166
	2-Sep-15	3,400	28	34	120	242
95-A17-4	28-Oct-03	100U	0.5U	0.5U	0.5U	1U
	20-Oct-04	100U	1U	1U	1U	3U
	9-Nov-05	100U	1U	1U	1U	3U
	14-Jun-07	500U	1U	1U	1U	3U
	8-Mar-08	500U	1U	1U	1U	3U
	26-Aug-08	300	1U	1U	1U	3U
	9-Mar-09	500U	1U	1U	1U	3U
	21-Feb-10	50U	1U	1U	1U	3U
	9-Sep-11	50U	1U	1U	1U	3U
	14-Mar-12	50U	1U	1U	1U	2U
	21-Feb-13	250U	0.20U	0.20U	0.20U	0.40U
	14-Mar-14	250U	0.20U	0.20U	0.20U	0.40U
	22-Apr-15	25U	0.1U	0.1U	0.1U	0.2U
96-A17-5	28-Oct-03	100U	0.5U	0.5U	0.5U	1U
	9-Nov-05	100U	1U	1U	1U	3U
07-A17-7	7-Nov-07	3,400	130	6.8	130	31
	8-Mar-08	2,100	47	3.8	120	8.3
	26-Aug-08	1,990	132	5.7	199	4.6
	25-Aug-09	2,500U	79.1	5U	94.1	15U
Duplicate	25-Aug-09	2,500U	79.5	5U	95	15U
	21-Feb-10	50U	2.5	1U	1U	3U
	24-Aug-10*	18,000	210	220	690	2,500
	24-Feb-11	50U	1U	1U	1U	3U
	9-Sep-11	1,600	44	15	79	46
	14-Mar-12	50U	1U	1U	1U	2U
	16-Aug-12	150	4.7	3.9	1U	3U
	21-Feb-13	250U	0.20U	1.6	0.20U	0.40U
	13-Aug-13	250U	0.6	0.85	0.2U	0.4U
Duplicate	13-Aug-13	250U	0.57	0.63	0.25	0.4U
	14-Mar-14	250U	0.20U	0.25	0.20U	0.4U
	23-Sep-14	250U	0.5U	0.5U	0.5U	0.5U
	22-Apr-15	25U	0.1U	0.1U	0.1U	0.2U
	2-Sep-15	19J	0.1U	0.1U	0.05J	0.2U
10-A17-8	29-Nov-10	71,000	2,100	8,400	1,900	9,600
	25-Feb-11	22,000	720	1,000	490	2,220
Duplicate	25-Feb-11	21,000	730	1,100	490	2,210
	9-Sep-11	26,000	330	300	740	4,200
	18-Nov-11	74,000	900	6,200	2,200	11,500
	14-Mar-12	19,000	710	1,300	490	2,000
	22-May-12	13,000	630	830	350	2,050
	16-Aug-12	59,000	1,500	3,400	1,600	8,800
	21-Feb-13	34,000	1,100	2,000	640	3,700

Table C-2. Results of Groundwater Sampling for TPH-G and BTEX Concentrations (continued)

Well ID	Date	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)
10-A17-8	13-Aug-13	**70,000**	**770**	**3,600**	**1,700**	**8,900**
Cont.	10-Mar-14	**9,500**	**160**	**330**	**160**	**1,030**
	22-Sep-14	**3,500**	**46**	**90**	**61**	**410**
Duplicate	22-Sep-14	**3,700**	**50**	**110**	**65**	**440**
	22-Apr-15	**4,800**	**470**	**260**	**100**	**810**
Duplicate	22-Apr-15	**5,000**	**380**	**210**	**89**	**670**
	1-Sep-15	**25,000**	**170**	**800**	**740**	**3,750**
Duplicate	1-Sep-15	**24,000**	**180**	**870**	**770**	**3,920**
MTCA Cleanup Level		**800**	**5**	**1,000**	**700**	**1,000**

Notes:

TPH-G – Gasoline Range Total Petroleum Hydrocarbons
µg/L – Micrograms per liter
BOLD – Analyte detected above practical quantification limit
BOLD – Analyte detected above MTCA Method A cleanup level
U – Analyte not detected above result reporting limit
- – No data, not applicable
* – It is suspected that these samples' labels were switched
** – Sample was labelled as 95-A17-2 by mistake

APPENDIX D

AIR SAMPLE DATA AND CHAIN OF CUSTODY FORMS (PROVIDED ON CD)

eurofins | Air Toxics

3/26/2015

Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: JBLM AOC9-2
Project #: 10044.001.015
Workorder #: 1503218

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 3/13/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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

eurofins | Air Toxics

WORK ORDER #: 1503218

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 13810 SE Eastgate Way Suite 420 Bellevue, WA 98005
PHONE:	360-930-3187	**P.O. #**	REQ- 2722
FAX:		**PROJECT #**	10044.001.015 JBLM AOC9-2
DATE RECEIVED:	03/13/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	03/26/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC9-2-150311SVE 1000	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC9-2-150311SVE 1300	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC9-2-150311SVE 1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC9-2-150311SVE 1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC9-2-150311SVE DUP	TO-15	Tedlar Bag	Tedlar Bag
06A	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 03/26/15

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

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1503218

Five 1 Liter Tedlar Bag samples were received on March 13, 2015. 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.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	***TO-15 DoD QSM 5.0***	***ATL Modifications***
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv and 0.8 ppbv for compounds reported at 2.0 ppbv) may be false positives.

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Due to laboratory error, the sample duplicate per analytical batch requirement for this project was not met.

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

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC9-2-150311SVE 1000		
Lab ID:	1503218-01A	**Date/Time Analyzed:**	3/18/15 04:53 PM
Date/Time Collecte	3/11/15 10:00 AM	**Dilution Factor:**	2.05
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p031815

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.71	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	1.2	1.8	4.4	Not Detected U
m,p-Xylene	108-38-3	0.70	1.8	4.4	5.0
o-Xylene	95-47-6	0.75	1.8	4.4	1.5 J
Toluene	108-88-3	0.90	1.5	3.9	4.6
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	Not Detected U

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	101
4-Bromofluorobenzene	460-00-4	79-119	104
Toluene-d8	2037-26-5	87-113	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC9-2-150311SVE 1300		
Lab ID:	1503218-02A	**Date/Time Analyzed:**	3/18/15 05:16 PM
Date/Time Collecte	3/11/15 01:00 PM	**Dilution Factor:**	2.05
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p031816

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.71	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	1.2	1.8	4.4	1.3 J
m,p-Xylene	108-38-3	0.70	1.8	4.4	6.3
o-Xylene	95-47-6	0.75	1.8	4.4	1.8 J
Toluene	108-88-3	0.90	1.5	3.9	5.3
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	Not Detected U

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	102
4-Bromofluorobenzene	460-00-4	79-119	110
Toluene-d8	2037-26-5	87-113	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC9-2-150311SVE 1530		
Lab ID:	1503218-03A	**Date/Time Analyzed:**	3/18/15 05:40 PM
Date/Time Collecte	3/11/15 03:30 PM	**Dilution Factor:**	2.05
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p031817

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.71	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	1.2	1.8	4.4	Not Detected U
m,p-Xylene	108-38-3	0.70	1.8	4.4	4.9
o-Xylene	95-47-6	0.75	1.8	4.4	1.7 J
Toluene	108-88-3	0.90	1.5	3.9	3.9
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	Not Detected U

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	111
4-Bromofluorobenzene	460-00-4	79-119	113
Toluene-d8	2037-26-5	87-113	98

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC9-2-150311SVE 1800		
Lab ID:	1503218-04A	**Date/Time Analyzed:**	3/18/15 06:03 PM
Date/Time Collecte	3/11/15 06:00 PM	**Dilution Factor:**	2.05
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p031818

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.71	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	1.2	1.8	4.4	6.0
m,p-Xylene	108-38-3	0.70	1.8	4.4	4.9
o-Xylene	95-47-6	0.75	1.8	4.4	2.1 J
Toluene	108-88-3	0.90	1.5	3.9	7.7
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	Not Detected U

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	105
4-Bromofluorobenzene	460-00-4	79-119	109
Toluene-d8	2037-26-5	87-113	103

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	AOC9-2-150311SVE DUP		
Lab ID:	1503218-05A	**Date/Time Analyzed:**	3/18/15 06:27 PM
Date/Time Collecte	3/11/15 01:00 PM	**Dilution Factor:**	2.09
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msdp.i / p031819

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.73	1.3	3.3	Not Detected U
Ethyl Benzene	100-41-4	1.2	1.8	4.5	1.9 J
m,p-Xylene	108-38-3	0.71	1.8	4.5	6.1
o-Xylene	95-47-6	0.77	1.8	4.5	3.0 J
Toluene	108-88-3	0.91	1.6	3.9	5.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	430	Not Detected U

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	98
4-Bromofluorobenzene	460-00-4	79-119	112
Toluene-d8	2037-26-5	87-113	104

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	Lab Blank		
Lab ID:	1503218-06A	**Date/Time Analyzed:**	3/18/15 11:51 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p031806a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.35	0.64	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.60	0.87	2.2	Not Detected U
m,p-Xylene	108-38-3	0.34	0.87	2.2	Not Detected U
o-Xylene	95-47-6	0.37	0.87	2.2	Not Detected U
Toluene	108-88-3	0.44	0.75	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	107
4-Bromofluorobenzene	460-00-4	79-119	107
Toluene-d8	2037-26-5	87-113	103

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	CCV		
Lab ID:	1503218-07A	**Date/Time Analyzed:**	3/18/15 09:50 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p031802a

Compound	CAS#	%Recovery
Benzene	71-43-2	76
Ethyl Benzene	100-41-4	78
m,p-Xylene	108-38-3	79
o-Xylene	95-47-6	80
Toluene	108-88-3	78
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	105
4-Bromofluorobenzene	460-00-4	79-119	110
Toluene-d8	2037-26-5	87-113	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	LCS		
Lab ID:	1503218-08A	**Date/Time Analyzed:**	3/18/15 10:33 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p031803a

Compound	CAS#	%Recovery
Benzene	71-43-2	83
Ethyl Benzene	100-41-4	84
m,p-Xylene	108-38-3	86
o-Xylene	95-47-6	90
Toluene	108-88-3	87
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	106
4-Bromofluorobenzene	460-00-4	79-119	105
Toluene-d8	2037-26-5	87-113	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC9-2

Client ID:	LCSD		
Lab ID:	1503218-08AA	**Date/Time Analyzed:**	3/18/15 10:57 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p031804a

Compound	CAS#	%Recovery
Benzene	71-43-2	82
Ethyl Benzene	100-41-4	86
m,p-Xylene	108-38-3	87
o-Xylene	95-47-6	91
Toluene	108-88-3	89
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	107
4-Bromofluorobenzene	460-00-4	79-119	105
Toluene-d8	2037-26-5	87-113	102

* % Recovery is calculated using unrounded analytical results.

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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 SCOTT ELKIND

Collected by: (Print and Sign) BOB THOMAS/TOM MALAMAKAL

Company SEALASKA ENVIRONMENTAL Email SCOTT.ELKIND@SEALASKA.COM

Address PO BOX 869 18743 FRONT ST NE, 201 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax 360-598-3116

Project Info:
P.O. # REQ-2722
Project # 10044.001.015
Project Name JBLM AOC9-2

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	AOC9-2-150311SVE 1000	TEDLAR	3/11/15	1000	TO-15 BTEX, TPH-G				
02A	AOC9-2-150311SVE 1300	"	"	1300	" " "				
03A	AOC9-2-150311 SVE 1530	"	"	1530	" " "				
04A	AOC9-2-150311 SVE 1800	"	"	1800	" " "				
05A	AOC9-2-150311 SVE DUP	"	"	1300	" " "				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Bob Thomas	3/12/15 0800	SATR	3-13-15 1020
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	1503218

Form 1293 rev.11

eurofins | Air Toxics

6/18/2015

Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: JBLM AOC 9-2
Project #: 10044.001.015
Workorder #: 1506086

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 6/5/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1506086

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 13810 SE Eastgate Way Suite 420 Bellevue, WA 98005
PHONE:	360-930-3187	**P.O. #**	REQ-2722
FAX:		**PROJECT #**	10044.001.015 JBLM AOC 9-2
DATE RECEIVED:	06/05/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/18/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92150604SVP1A	TO-15	Tedlar Bag	Tedlar Bag
01AA	AOC92150604SVP1A Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC92150604SVP1B	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC92150604SVP2A	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC92150604SVP3A	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC92150604SVP4A	TO-15	Tedlar Bag	Tedlar Bag
06A	AOC92150604SVP5A	TO-15	Tedlar Bag	Tedlar Bag
07A	AOC92150604SVP5B	TO-15	Tedlar Bag	Tedlar Bag
08A	AOC92150604SVP6A	TO-15	Tedlar Bag	Tedlar Bag
09A	AOC92150604SVP7A	TO-15	Tedlar Bag	Tedlar Bag
10A	AOC92150604SVP7B	TO-15	Tedlar Bag	Tedlar Bag
11A	AOC92150604SVP8A	TO-15	Tedlar Bag	Tedlar Bag
12A	Lab Blank	TO-15	NA	NA
13A	CCV	TO-15	NA	NA
14A	LCS	TO-15	NA	NA
14AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/18/15

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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LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1506086

Eleven 1 Liter Tedlar Bag samples were received on June 05, 2015. 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.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	***TO-15 DoD QSM 5.0***	***ATL Modifications***
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

The Chain of Custody (COC) was not relinquished properly. A date was not provided by the field sampler.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv and 0.8 ppbv for compounds reported at 2.0 ppbv) may be false positives.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

Samples AOC92150604SVP1A, AOC92150604SVP1B, AOC92150604SVP2A, AOC92150604SVP3A, AOC92150604SVP4A, AOC92150604SVP5A, AOC92150604SVP5B, AOC92150604SVP6A, AOC92150604SVP7A, AOC92150604SVP7B and AOC92150604SVP8A

were transferred from Tedlar bags into summa canisters to extend the hold time from 3 days to 30 days. Canister pressurization resulted in a dilution factor which was applied to all analytical results.

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

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP1A		
Lab ID:	1506086-01A	**Date/Time Analyzed:**	6/8/15 10:37 PM
Date/Time Collecte	6/4/15 08:22 AM	**Dilution Factor:**	2.53
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060814

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	2.0	4.0	5.6
Ethyl Benzene	100-41-4	1.1	2.7	5.5	21
m,p-Xylene	108-38-3	1.0	2.7	5.5	85
o-Xylene	95-47-6	0.77	2.7	5.5	25
Toluene	108-88-3	1.1	2.4	4.8	140
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	520	1100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	110
4-Bromofluorobenzene	460-00-4	79-119	82
Toluene-d8	2037-26-5	87-113	103

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP1A Lab Duplicate		
Lab ID:	1506086-01AA	**Date/Time Analyzed:**	6/8/15 11:18 PM
Date/Time Collecte	6/4/15 08:22 AM	**Dilution Factor:**	2.53
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060815

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	2.0	4.0	5.6
Ethyl Benzene	100-41-4	1.1	2.7	5.5	20
m,p-Xylene	108-38-3	1.0	2.7	5.5	88
o-Xylene	95-47-6	0.77	2.7	5.5	27
Toluene	108-88-3	1.1	2.4	4.8	140
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	520	1300

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	108
4-Bromofluorobenzene	460-00-4	79-119	86
Toluene-d8	2037-26-5	87-113	103

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP1B		
Lab ID:	1506086-02A	**Date/Time Analyzed:**	6/8/15 11:46 PM
Date/Time Collecte	6/4/15 08:31 AM	**Dilution Factor:**	2.25
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060816

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.34	1.8	3.6	20
Ethyl Benzene	100-41-4	0.95	2.4	4.9	19
m,p-Xylene	108-38-3	0.90	2.4	4.9	81
o-Xylene	95-47-6	0.68	2.4	4.9	24
Toluene	108-88-3	0.94	2.1	4.2	130
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	460	820

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	110
4-Bromofluorobenzene	460-00-4	79-119	82
Toluene-d8	2037-26-5	87-113	104

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP2A		
Lab ID:	1506086-03A	**Date/Time Analyzed:**	6/9/15 12:28 AM
Date/Time Collecte	6/4/15 08:51 AM	**Dilution Factor:**	2.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060817

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.6	3.2	4.2
Ethyl Benzene	100-41-4	0.84	2.2	4.3	18
m,p-Xylene	108-38-3	0.80	2.2	4.3	75
o-Xylene	95-47-6	0.60	2.2	4.3	24
Toluene	108-88-3	0.84	1.9	3.8	96
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	410	1200

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	115
4-Bromofluorobenzene	460-00-4	79-119	85
Toluene-d8	2037-26-5	87-113	101

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP3A		
Lab ID:	1506086-04A	**Date/Time Analyzed:**	6/9/15 12:55 AM
Date/Time Collecte	6/4/15 09:10 AM	**Dilution Factor:**	2.04
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060818

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.6	3.2	1.5 J
Ethyl Benzene	100-41-4	0.86	2.2	4.4	15
m,p-Xylene	108-38-3	0.81	2.2	4.4	64
o-Xylene	95-47-6	0.62	2.2	4.4	19
Toluene	108-88-3	0.86	1.9	3.8	95
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	980

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	112
4-Bromofluorobenzene	460-00-4	79-119	82
Toluene-d8	2037-26-5	87-113	104

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP4A		
Lab ID:	1506086-05A	**Date/Time Analyzed:**	6/9/15 01:37 AM
Date/Time Collecte	6/4/15 09:32 AM	**Dilution Factor:**	3.78
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060819

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.58	3.0	6.0	4.3 J
Ethyl Benzene	100-41-4	1.6	4.1	8.2	11
m,p-Xylene	108-38-3	1.5	4.1	8.2	43
o-Xylene	95-47-6	1.1	4.1	8.2	15
Toluene	108-88-3	1.6	3.6	7.1	87
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	770	2300

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	104
4-Bromofluorobenzene	460-00-4	79-119	85
Toluene-d8	2037-26-5	87-113	104

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP5A		
Lab ID:	1506086-06A	**Date/Time Analyzed:**	6/9/15 02:05 AM
Date/Time Collecte	6/4/15 10:40 AM	**Dilution Factor:**	2.04
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060820

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.6	3.2	1.4 J
Ethyl Benzene	100-41-4	0.86	2.2	4.4	15
m,p-Xylene	108-38-3	0.81	2.2	4.4	62
o-Xylene	95-47-6	0.62	2.2	4.4	21
Toluene	108-88-3	0.86	1.9	3.8	67
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	900

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	112
4-Bromofluorobenzene	460-00-4	79-119	84
Toluene-d8	2037-26-5	87-113	101

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP5B		
Lab ID:	1506086-07A	**Date/Time Analyzed:**	6/9/15 08:38 AM
Date/Time Collecte	6/4/15 11:10 AM	**Dilution Factor:**	2.03
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060826

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.6	3.2	1.6 J
Ethyl Benzene	100-41-4	0.86	2.2	4.4	13
m,p-Xylene	108-38-3	0.81	2.2	4.4	58
o-Xylene	95-47-6	0.61	2.2	4.4	19
Toluene	108-88-3	0.85	1.9	3.8	58
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	900

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	110
4-Bromofluorobenzene	460-00-4	79-119	83
Toluene-d8	2037-26-5	87-113	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP6A		
Lab ID:	1506086-08A	**Date/Time Analyzed:**	6/9/15 03:15 AM
Date/Time Collecte	6/4/15 10:18 AM	**Dilution Factor:**	2.03
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060822

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.6	3.2	2.4 J
Ethyl Benzene	100-41-4	0.86	2.2	4.4	19
m,p-Xylene	108-38-3	0.81	2.2	4.4	83
o-Xylene	95-47-6	0.61	2.2	4.4	30
Toluene	108-88-3	0.85	1.9	3.8	80
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	1100

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	111
4-Bromofluorobenzene	460-00-4	79-119	86
Toluene-d8	2037-26-5	87-113	104

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP7A		
Lab ID:	1506086-09A	**Date/Time Analyzed:**	6/9/15 03:57 AM
Date/Time Collecte	6/4/15 11:38 AM	**Dilution Factor:**	2.06
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060823

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.32	1.6	3.3	12
Ethyl Benzene	100-41-4	0.87	2.2	4.5	12
m,p-Xylene	108-38-3	0.82	2.2	4.5	51
o-Xylene	95-47-6	0.62	2.2	4.5	19
Toluene	108-88-3	0.87	1.9	3.9	52
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	820

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	113
4-Bromofluorobenzene	460-00-4	79-119	84
Toluene-d8	2037-26-5	87-113	104

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP7B		
Lab ID:	1506086-10A	**Date/Time Analyzed:**	6/9/15 04:24 AM
Date/Time Collecte	6/4/15 11:49 AM	**Dilution Factor:**	2.03
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060824

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.31	1.6	3.2	1.3 J
Ethyl Benzene	100-41-4	0.86	2.2	4.4	13
m,p-Xylene	108-38-3	0.81	2.2	4.4	58
o-Xylene	95-47-6	0.61	2.2	4.4	22
Toluene	108-88-3	0.85	1.9	3.8	52
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	420	820

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	113
4-Bromofluorobenzene	460-00-4	79-119	82
Toluene-d8	2037-26-5	87-113	104

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92150604SVP8A		
Lab ID:	1506086-11A	**Date/Time Analyzed:**	6/9/15 05:06 AM
Date/Time Collecte	6/4/15 09:57 AM	**Dilution Factor:**	2.95
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msda.i / a060825

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.45	2.4	4.7	2.5 J
Ethyl Benzene	100-41-4	1.2	3.2	6.4	19
m,p-Xylene	108-38-3	1.2	3.2	6.4	84
o-Xylene	95-47-6	0.89	3.2	6.4	30
Toluene	108-88-3	1.2	2.8	5.6	90
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	600	1100

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	110
4-Bromofluorobenzene	460-00-4	79-119	83
Toluene-d8	2037-26-5	87-113	100

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1506086-12A	**Date/Time Analyzed:**	6/8/15 12:10 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a060806a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.15	0.80	1.6	0.24 J
Ethyl Benzene	100-41-4	0.42	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.40	1.1	2.2	Not Detected U
o-Xylene	95-47-6	0.30	1.1	2.2	Not Detected U
Toluene	108-88-3	0.42	0.94	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	110
4-Bromofluorobenzene	460-00-4	79-119	82
Toluene-d8	2037-26-5	87-113	106

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	CCV		
Lab ID:	1506086-13A	**Date/Time Analyzed:**	6/8/15 09:28 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a060802a

Compound	CAS#	%Recovery
Benzene	71-43-2	111
Ethyl Benzene	100-41-4	101
m,p-Xylene	108-38-3	104
o-Xylene	95-47-6	103
Toluene	108-88-3	108
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	113
4-Bromofluorobenzene	460-00-4	79-119	85
Toluene-d8	2037-26-5	87-113	107

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCS		
Lab ID:	1506086-14A	**Date/Time Analyzed:**	6/8/15 10:06 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a060803a

Compound	CAS#	%Recovery
Benzene	71-43-2	110
Ethyl Benzene	100-41-4	101
m,p-Xylene	108-38-3	102
o-Xylene	95-47-6	103
Toluene	108-88-3	107
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	110
4-Bromofluorobenzene	460-00-4	79-119	83
Toluene-d8	2037-26-5	87-113	105

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCSD		
Lab ID:	1506086-14AA	**Date/Time Analyzed:**	6/8/15 11:04 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msda.i / a060804a

Compound	CAS#	%Recovery
Benzene	71-43-2	108
Ethyl Benzene	100-41-4	104
m,p-Xylene	108-38-3	106
o-Xylene	95-47-6	106
Toluene	108-88-3	107
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	107
4-Bromofluorobenzene	460-00-4	79-119	86
Toluene-d8	2037-26-5	87-113	104

* % Recovery is calculated using unrounded analytical results.

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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 SCOTT ELKIND
Collected by: (Print and Sign) TOM MALAMAKAL
Company SEALASKA ENVIRONMENTAL Email SCOTT.ELKIND@SEALASKA.COM
Address PO BOX 869 18743 FROST ST. NE STE 201 City POULSBO State WA Zip 98370
Phone Fax

Project Info:
P.O. # REQ - 2722
Project # 10044.001.015
Project Name JBLM AOC 9-2

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	AOC92150604SVP1A	TEDLAR	6/4/15	8:22	TO-15 BTEX, TPH-G				
02A	AOC92150604SVP1B	"	"	8:31	" " "				
03A	AOC92150604SVP2A	"	"	8:51	" " "				
04A	AOC92150604SVP3A	"	"	9:10	" " "				
05A	AOC92150604SVP4A	"	"	9:32	" " "				
06A	AOC92150604SVP5A	"	"	10:40	" " "				
07A	AOC92150604SVP5B	"	"	11:10	" " "				
08A	AOC92150604SVP6A	"	"	10:18	" " "				
09A	AOC92150604SVP7A	"	"	11:38	" " "				
10A	AOC92150604SVP7B	"	"	11:49	" " "				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	6/4/15	YSAR	6/5/15 1000
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)	1506086

Form 1293 rev.11

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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: SCOTT ELKIND
Collected by: (Print and Sign) TOM MALAMAKAL [signature]
Company: SEALASKA ENVIRONMENTAL Email: SCOTT.ELKIND@SEALASKA.COM
Address: PO BOX 869 18743 FRONT ST NE STE 201 City: POULSBO State: WA Zip: 98370
Phone: 360-626-3991 Fax: 360-598-3116

Project Info:
P.O. #: REQ-2722
Project #: 10644.001.015
Project Name: JBLM AOC 9-2

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	AOC9215060 4SVP8A	TEDLAR	6/4/15	9:57	TO-15, BTEX, TPH-G				

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
[signature]	[signature] EAP 6/5/15 1000
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)	1506086

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7/6/2015

Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: JBLM AOC 9-2
Project #: 10044.001.015
Workorder #: 1506369

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 6/20/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1506369

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 13810 SE Eastgate Way Suite 420 Bellevue, WA 98005
PHONE:	360-930-3187	**P.O. #**	REQ - 2722
FAX:		**PROJECT #**	10044.001.015 JBLM AOC 9-2
DATE RECEIVED:	06/20/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	07/06/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC9-2-150618SVE 1000	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC9-2-150618SVE 1300	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC9-2-150618SVE 1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC9-2-150618SVE 1800	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC9-2-150618SVE DUP	TO-15	Tedlar Bag	Tedlar Bag
05AA	AOC9-2-150618SVE DUP Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
06A	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 07/06/15

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

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1506369

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.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	*TO-15 DoD QSM 5.0*	*ATL Modifications*
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv) may be false positives.

Dilution was performed on all of the samples due to the presence of high level non-target species.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

All of the samples were transferred from Tedlar bags into summa canisters to extend the hold time from 72 hours to 30 days. Canister pressurization resulted in a dilution factor which was applied to all analytical results.

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

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

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150618SVE 1000		
Lab ID:	1506369-01A	**Date/Time Analyzed:**	6/24/15 12:56 AM
Date/Time Collecte	6/18/15 10:00 AM	**Dilution Factor:**	4.08
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3062327

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	1.6	4.6	6.5	3.2 J
Ethyl Benzene	100-41-4	2.2	6.2	8.8	Not Detected U
m,p-Xylene	108-38-3	2.2	6.2	8.8	5.2 J
o-Xylene	95-47-6	2.2	6.2	8.8	Not Detected U
Toluene	108-88-3	2.5	5.4	7.7	17
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	830	7500

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	109
4-Bromofluorobenzene	460-00-4	79-119	107
Toluene-d8	2037-26-5	87-113	92

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150618SVE 1300		
Lab ID:	1506369-02A	**Date/Time Analyzed:**	6/24/15 01:20 AM
Date/Time Collecte	6/18/15 01:00 PM	**Dilution Factor:**	4.08
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3062328

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	1.6	4.6	6.5	3.0 J
Ethyl Benzene	100-41-4	2.2	6.2	8.8	Not Detected U
m,p-Xylene	108-38-3	2.2	6.2	8.8	4.9 J
o-Xylene	95-47-6	2.2	6.2	8.8	Not Detected U
Toluene	108-88-3	2.5	5.4	7.7	16
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	830	6300

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	120
4-Bromofluorobenzene	460-00-4	79-119	107
Toluene-d8	2037-26-5	87-113	93

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150618SVE 1530		
Lab ID:	1506369-03A	**Date/Time Analyzed:**	6/24/15 01:44 AM
Date/Time Collecte	6/18/15 03:30 PM	**Dilution Factor:**	4.08
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3062329

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	1.6	4.6	6.5	3.3 J
Ethyl Benzene	100-41-4	2.2	6.2	8.8	Not Detected U
m,p-Xylene	108-38-3	2.2	6.2	8.8	Not Detected U
o-Xylene	95-47-6	2.2	6.2	8.8	Not Detected U
Toluene	108-88-3	2.5	5.4	7.7	12
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	830	6900

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	115
4-Bromofluorobenzene	460-00-4	79-119	108
Toluene-d8	2037-26-5	87-113	93

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150618SVE 1800		
Lab ID:	1506369-04A	**Date/Time Analyzed:**	6/24/15 02:09 AM
Date/Time Collecte	6/18/15 06:00 PM	**Dilution Factor:**	4.10
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3062330

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	1.6	4.6	6.5	3.2 J
Ethyl Benzene	100-41-4	2.2	6.2	8.9	Not Detected U
m,p-Xylene	108-38-3	2.2	6.2	8.9	2.3 J
o-Xylene	95-47-6	2.3	6.2	8.9	Not Detected U
Toluene	108-88-3	2.5	5.4	7.7	12
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	840	6800

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	119
4-Bromofluorobenzene	460-00-4	79-119	106
Toluene-d8	2037-26-5	87-113	91

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150618SVE DUP		
Lab ID:	1506369-05A	**Date/Time Analyzed:**	6/24/15 02:33 AM
Date/Time Collecte	6/18/15 01:00 PM	**Dilution Factor:**	4.02
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3062331

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	1.6	4.5	6.4	2.8 J
Ethyl Benzene	100-41-4	2.2	6.1	8.7	Not Detected U
m,p-Xylene	108-38-3	2.2	6.1	8.7	2.3 J
o-Xylene	95-47-6	2.2	6.1	8.7	Not Detected U
Toluene	108-88-3	2.5	5.3	7.6	13
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	820	7300

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	121
4-Bromofluorobenzene	460-00-4	79-119	106
Toluene-d8	2037-26-5	87-113	89

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150618SVE DUP Lab Duplicate		
Lab ID:	1506369-05AA	**Date/Time Analyzed:**	6/24/15 02:57 AM
Date/Time Collecte	6/18/15 01:00 PM	**Dilution Factor:**	4.02
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd3.i / 3062332

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	1.6	4.5	6.4	3.3 J
Ethyl Benzene	100-41-4	2.2	6.1	8.7	Not Detected U
m,p-Xylene	108-38-3	2.2	6.1	8.7	Not Detected U
o-Xylene	95-47-6	2.2	6.1	8.7	Not Detected U
Toluene	108-88-3	2.5	5.3	7.6	14
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	820	7400

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	115
4-Bromofluorobenzene	460-00-4	79-119	107
Toluene-d8	2037-26-5	87-113	94

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1506369-06A	**Date/Time Analyzed:**	6/23/15 01:50 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3062309e

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	1.1	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.55	1.5	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.5	2.2	Not Detected U
o-Xylene	95-47-6	0.55	1.5	2.2	Not Detected U
Toluene	108-88-3	0.61	1.3	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	103
4-Bromofluorobenzene	460-00-4	79-119	107
Toluene-d8	2037-26-5	87-113	93

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	CCV		
Lab ID:	1506369-07A	**Date/Time Analyzed:**	6/23/15 08:52 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3062302a

Compound	**CAS#**	**%Recovery**
Benzene	71-43-2	97
Ethyl Benzene	100-41-4	102
m,p-Xylene	108-38-3	104
o-Xylene	95-47-6	110
Toluene	108-88-3	85
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	**CAS#**	**Limits**	**%Recovery**
1,2-Dichloroethane-d4	17060-07-0	75-130	98
4-Bromofluorobenzene	460-00-4	79-119	106
Toluene-d8	2037-26-5	87-113	93

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCS		
Lab ID:	1506369-08A	**Date/Time Analyzed:**	6/23/15 09:17 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3062303a

Compound	CAS#	%Recovery
Benzene	71-43-2	101
Ethyl Benzene	100-41-4	104
m,p-Xylene	108-38-3	106
o-Xylene	95-47-6	114
Toluene	108-88-3	88
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	99
4-Bromofluorobenzene	460-00-4	79-119	106
Toluene-d8	2037-26-5	87-113	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCSD		
Lab ID:	1506369-08AA	**Date/Time Analyzed:**	6/23/15 09:41 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3062304a

Compound	CAS#	%Recovery
Benzene	71-43-2	100
Ethyl Benzene	100-41-4	103
m,p-Xylene	108-38-3	105
o-Xylene	95-47-6	113
Toluene	108-88-3	88
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	75-130	100
4-Bromofluorobenzene	460-00-4	79-119	106
Toluene-d8	2037-26-5	87-113	94

* % Recovery is calculated using unrounded analytical results.

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

Project Manager SCOTT ELKIND

Collected by: (Print and Sign) TOM MALAMAKAL

Company SEALASKA Email SCOTT.ELKIND@SEALASKA.COM

Address 18743 FRONT ST. NE SUITE 201 City POULSBO State WA Zip 98370

Phone (360) 626-3991 Fax (360) 598-3116

Project Info:
P.O. # REQ-2722
Project # 10044.001.015
Project Name JBLM AOC 9-2

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	AOC9-2-150618SVE 1000	TEDLAR	6/18/15	10:00	TO-15 BTEX, TPH-G				
02A	AOC9-2-150618SVE 1300	"	"	1300	" " "				
03A	AOC9-2-150618SVE 1530	"	"	1530	" " "				
04A	AOC9-2-150618SVE 1800	"	"	1800	" " "				
05A	AOC9-2-150618SVE DUP	"	"	1300	" " "				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Malamakal	6/19/15 1400	[illegible] FAR	6/20/15 0935
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 #
	FLEX		NA	Cool	Yes No (None)	1506369

Form 1293 rev.11

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10/14/2015
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: JBLM AOC 9-2
Project #: 10044.0
Workorder #: 1510006

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 10/1/2015 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 #: 1510006

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 13810 SE Eastgate Way Suite 420 Bellevue, WA 98005
PHONE:	360-930-3187	**P.O. #**	REQ-2722
FAX:		**PROJECT #**	10044.0 JBLM AOC 9-2
DATE RECEIVED:	10/01/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/14/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC9-2-150929SVE 1000	TO-15	Tedlar Bag	Tedlar Bag
01AA	AOC9-2-150929SVE 1000 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC9-2-150929SVE 1300	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC9-2-150929SVE 1530	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC9-2-150929SVE 1800	TO-15	Tedlar Bag	Tedlar Bag
05A	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 10/14/15

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

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

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1510006

Four Client Tedlar Bag samples were received on October 01, 2015. 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.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	*TO-15 DoD QSM 5.0*	*ATL Modifications*
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv and 0.8 ppbv for compounds reported at 2.0 ppbv) may be false positives.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

Surrogate recoveries for Toluene-d8 did not meet in-house generated control limits in LCSD analyzed on 10/02/15 and the following samples AOC9-2-150929SVE 1300 and AOC9-2-150929SVE 1800 , but were within laboratory acceptance limits of 70-130%.

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

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150929SVE 1000		
Lab ID:	1510006-01A	**Date/Time Analyzed:**	10/2/15 05:45 PM
Date/Time Collected:	9/29/15 10:00 AM	**Dilution Factor:**	1.00
Media:	Client Tedlar Bag	**Instrument/Filename:**	msd3.i / 3100209

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	1.4 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	2.3
m,p-Xylene	108-38-3	0.55	1.1	2.2	10
o-Xylene	95-47-6	0.55	1.1	2.2	3.7
Toluene	108-88-3	0.61	0.94	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	330

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	103
4-Bromofluorobenzene	460-00-4	76-121	101
Toluene-d8	2037-26-5	87-111	109

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150929SVE 1000 Lab Duplicate		
Lab ID:	1510006-01AA	**Date/Time Analyzed:**	10/2/15 06:22 PM
Date/Time Collected:	9/29/15 10:00 AM	**Dilution Factor:**	1.00
Media:	Client Tedlar Bag	**Instrument/Filename:**	msd3.i / 3100210

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	1.3 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	2.1 J
m,p-Xylene	108-38-3	0.55	1.1	2.2	9.0
o-Xylene	95-47-6	0.55	1.1	2.2	3.3
Toluene	108-88-3	0.61	0.94	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	105
4-Bromofluorobenzene	460-00-4	76-121	99
Toluene-d8	2037-26-5	87-111	108

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150929SVE 1300		
Lab ID:	1510006-02A	**Date/Time Analyzed:**	10/2/15 06:48 PM
Date/Time Collected:	9/29/15 01:00 PM	**Dilution Factor:**	1.00
Media:	Client Tedlar Bag	**Instrument/Filename:**	msd3.i / 3100211

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	1.5 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	4.3
m,p-Xylene	108-38-3	0.55	1.1	2.2	4.7
o-Xylene	95-47-6	0.55	1.1	2.2	4.4
Toluene	108-88-3	0.61	0.94	1.9	18
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	980

J = Estimated value.
Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	105
4-Bromofluorobenzene	460-00-4	76-121	98
Toluene-d8	2037-26-5	87-111	120 Q

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150929SVE 1530		
Lab ID:	1510006-03A	**Date/Time Analyzed:**	10/2/15 10:01 PM
Date/Time Collected:	9/29/15 03:30 PM	**Dilution Factor:**	1.00
Media:	Client Tedlar Bag	**Instrument/Filename:**	msd3.i / 3100217

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	0.62 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	1.7 J
m,p-Xylene	108-38-3	0.55	1.1	2.2	2.4
o-Xylene	95-47-6	0.55	1.1	2.2	0.94 J
Toluene	108-88-3	0.61	0.94	1.9	11
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1600

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	103
4-Bromofluorobenzene	460-00-4	76-121	102
Toluene-d8	2037-26-5	87-111	96

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-150929SVE 1800		
Lab ID:	1510006-04A	**Date/Time Analyzed:**	10/2/15 07:52 PM
Date/Time Collected:	9/29/15 06:00 PM	**Dilution Factor:**	1.00
Media:	Client Tedlar Bag	**Instrument/Filename:**	msd3.i / 3100213

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	0.49 J
Ethyl Benzene	100-41-4	0.55	1.1	2.2	1.3 J
m,p-Xylene	108-38-3	0.55	1.1	2.2	1.6 J
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	13
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1600

J = Estimated value.
U = The analyte was not detected above the MDL.
Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	103
4-Bromofluorobenzene	460-00-4	76-121	100
Toluene-d8	2037-26-5	87-111	112 Q

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1510006-05A	**Date/Time Analyzed:**	10/2/15 02:26 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3100207a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.39	0.80	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.55	1.1	2.2	Not Detected U
m,p-Xylene	108-38-3	0.55	1.1	2.2	Not Detected U
o-Xylene	95-47-6	0.55	1.1	2.2	Not Detected U
Toluene	108-88-3	0.61	0.94	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	102
4-Bromofluorobenzene	460-00-4	76-121	96
Toluene-d8	2037-26-5	87-111	97

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	CCV		
Lab ID:	1510006-06A	**Date/Time Analyzed:**	10/2/15 12:00 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3100202a

Compound	CAS#	%Recovery
Benzene	71-43-2	83
Ethyl Benzene	100-41-4	92
m,p-Xylene	108-38-3	93
o-Xylene	95-47-6	92
Toluene	108-88-3	78
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	104
4-Bromofluorobenzene	460-00-4	76-121	99
Toluene-d8	2037-26-5	87-111	91

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCS		
Lab ID:	1510006-07A	**Date/Time Analyzed:**	10/2/15 12:25 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3100203a

Compound	CAS#	%Recovery
Benzene	71-43-2	100
Ethyl Benzene	100-41-4	102
m,p-Xylene	108-38-3	98
o-Xylene	95-47-6	101
Toluene	108-88-3	94
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	99
4-Bromofluorobenzene	460-00-4	76-121	99
Toluene-d8	2037-26-5	87-111	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCSD		
Lab ID:	1510006-07AA	**Date/Time Analyzed:**	10/2/15 01:05 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd3.i / 3100204a

Compound	CAS#	%Recovery
Benzene	71-43-2	115
Ethyl Benzene	100-41-4	100
m,p-Xylene	108-38-3	100
o-Xylene	95-47-6	104
Toluene	108-88-3	107
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-124	100
4-Bromofluorobenzene	460-00-4	76-121	99
Toluene-d8	2037-26-5	87-111	114 Q

* % Recovery is calculated using unrounded analytical results.

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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 SCOTT ELKINS

Collected by: (Print and Sign) BOB THOMAS / TOM MCMANIGAL

Company SEVERN ENVIRONMENTAL Email SCOTT.ELKINS@SEVERN.COM

Address 18743 FRONT ST NE STE 201 City POULSBO State WA Zip 98370

Phone 360-626-2991 Fax 360-598-3116

Project Info:
P.O. # REQ-2722
Project # 10014.0
Project Name DSLM AOC9-2

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
01A	AOC9-2-150929 SVE 1044	TEDLAR	9/29/15	1044	TO-15 BTEX, TPH-G				
02A	AOC9-2-150929 SVE 1344	TEDLAR	9/29/15	1344	TO-15 BTEX, TPH-G				
03A	AOC9-2-150929 SVE 1534	TEDLAR	9/29/15	1534	TO-15 BTEX, TPH-G				
04A	AOC9-2-150929 SVE 1844	TEDLAR	9/29/15	1844	TO-15 BTEX, TPH-G				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	9/29/15 1832	[signature]	10-1-15 0950
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		1.6	Good	Yes No None	1510006

Form 1002 rev.1

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12/18/2015
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: JBLM AOC 9-2
Project #: 10044.001.015
Workorder #: 1512112

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 12/5/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified 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

eurofins | Air Toxics

WORK ORDER #: 1512112

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 13810 SE Eastgate Way Suite 420 Bellevue, WA 98005
PHONE:	360-930-3187	**P.O. #**	REQ-2722
FAX:		**PROJECT #**	10044.001.015 JBLM AOC 9-2
DATE RECEIVED:	12/05/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/18/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC92151202 SUPPLY	Modified TO-15	5.1 "Hg	5.1 psi
01B	AOC92151202 SUPPLY	Modified TO-15	5.1 "Hg	5.1 psi
02A	AOC92151202 CONF	Modified TO-15	6.3 "Hg	4.9 psi
02B	AOC92151202 CONF	Modified TO-15	6.3 "Hg	4.9 psi
03A	AOC92151202 CUST	Modified TO-15	6.1 "Hg	4.7 psi
03B	AOC92151202 CUST	Modified TO-15	6.1 "Hg	4.7 psi
04A	AOC92151202 AAFES	Modified TO-15	4.5 "Hg	4.8 psi
04AA	AOC92151202 AAFES Lab Duplicate	Modified TO-15	4.5 "Hg	4.8 psi
04B	AOC92151202 AAFES	Modified TO-15	4.5 "Hg	4.8 psi
04BB	AOC92151202 AAFES Lab Duplicate	Modified TO-15	4.5 "Hg	4.8 psi
05A	AOC92151202 FD	Modified TO-15	5.3 "Hg	4.9 psi
05B	AOC92151202 FD	Modified TO-15	5.3 "Hg	4.9 psi
06A	AOC92151202 LOBBY	Modified TO-15	6.7 "Hg	4.9 psi
06B	AOC92151202 LOBBY	Modified TO-15	6.7 "Hg	4.9 psi
07A	AOC92151202 GRAB	Modified TO-15	0.1 psi	5 psi
07B	AOC92151202 GRAB	Modified TO-15	0.1 psi	5 psi
08A	Lab Blank	Modified TO-15	NA	NA
08B	Lab Blank	Modified TO-15	NA	NA
09A	CCV	Modified TO-15	NA	NA
09B	CCV	Modified TO-15	NA	NA
10A	LCS	Modified TO-15	NA	NA
10AA	LCSD	Modified TO-15	NA	NA
10B	LCS	Modified TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1512112

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 13810 SE Eastgate Way Suite 420 Bellevue, WA 98005
PHONE:	360-930-3187	**P.O. #**	REQ-2722
FAX:		**PROJECT #**	10044.001.015 JBLM AOC 9-2
DATE RECEIVED:	12/05/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/18/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
10BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:  DATE: 12/18/15

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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LABORATORY NARRATIVE
DoD QSM 5.0 TO-15 LL/SIM
Sealaska Environmental Services, LLC
Workorder# 1512112

Three 6 Liter Summa Canister (SIM Certified Calscience) and four 6 Liter Summa Canister (SIM Certified) samples were received on December 05, 2015. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liter of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

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.

Method modifications and DoD QSM 5.0 modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the modifications.

Requirement	***TO-15 LL/SIM DoD QS***	***ATL Modifications***
Blank and standards	Zero air	UHP Nitrogren provides a higher purity gas matrix than zero air
Daily Calibration	+- 30% Difference	For Std. Full Scan: </= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.
DoD QSM 5.0 Section 1.7.4.1 Lab Blank	No analytes detected at >1/2 LOQ	No analytes detected at >/=LOQ.
Initial Calibration	</=30%RSD with 2 compounds out up to 40%RSD	(Full Scan): </=30%RSD with 4 compounds out up to 40%RSD SIM: Default criterion is </=30%RSD with 10% VOCs out up to 40%RSD.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The results for each sample in this report were acquired from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. All The canisters used for this project have been certified to the Reporting Limit for the target analytes included in this workorder. Concentrations that are below the level at which the canister was certified may be false positives.

Surrogate 4-Bromofluorobenzene did not meet in-house generated control limits in samples AOC92151202 SUPPLY (01A), AOC92151202 CONF (02A), AOC92151202 CUST (03A), AOC92151202 AAFES (04A), AOC92151202 AAFES Lab Duplicate (04AA), AOC92151202 FD (05A), AOC92151202 LOBBY (06A) and AOC92151202 GRAB (07A).

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.

CN - See case narrative explanation

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

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 SUPPLY		
Lab ID:	1512112-01A	**Date/Time Analyzed:**	12/10/15 03:59 PM
Date/Time Collected:	12/2/15 09:20 AM	**Dilution Factor:**	1.62
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121010

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	66	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	121
4-Bromofluorobenzene	460-00-4	79-114	64 Q
Toluene-d8	2037-26-5	89-108	102

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 SUPPLY		
Lab ID:	1512112-01B	**Date/Time Analyzed:**	12/10/15 03:59 PM
Date/Time Collected:	12/2/15 09:20 AM	**Dilution Factor:**	1.62
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121010sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.028	0.026	0.26	0.93
Ethyl Benzene	100-41-4	0.0098	0.035	0.14	0.46
m,p-Xylene	108-38-3	0.0058	0.035	0.28	1.7
o-Xylene	95-47-6	0.0087	0.035	0.14	0.59
Toluene	108-88-3	0.0068	0.030	0.12	3.8

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	119
4-Bromofluorobenzene	460-00-4	78-121	104
Toluene-d8	2037-26-5	92-109	105

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 CONF		
Lab ID:	1512112-02A	**Date/Time Analyzed:**	12/10/15 05:19 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.69
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121011

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	69	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	118
4-Bromofluorobenzene	460-00-4	79-114	63 Q
Toluene-d8	2037-26-5	89-108	102

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 CONF		
Lab ID:	1512112-02B	**Date/Time Analyzed:**	12/10/15 05:19 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.69
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121011sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.029	0.027	0.27	0.91
Ethyl Benzene	100-41-4	0.010	0.037	0.15	0.43
m,p-Xylene	108-38-3	0.0061	0.037	0.29	1.6
o-Xylene	95-47-6	0.0091	0.037	0.15	0.58
Toluene	108-88-3	0.0071	0.032	0.13	3.7

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	122
4-Bromofluorobenzene	460-00-4	78-121	106
Toluene-d8	2037-26-5	92-109	103

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 CUST		
Lab ID:	1512112-03A	**Date/Time Analyzed:**	12/10/15 06:06 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.66
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121012

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	68	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	124
4-Bromofluorobenzene	460-00-4	79-114	62 Q
Toluene-d8	2037-26-5	89-108	103

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 CUST		
Lab ID:	1512112-03B	**Date/Time Analyzed:**	12/10/15 06:06 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.66
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121012sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.029	0.026	0.26	0.92
Ethyl Benzene	100-41-4	0.010	0.036	0.14	0.46
m,p-Xylene	108-38-3	0.0060	0.036	0.29	1.6
o-Xylene	95-47-6	0.0089	0.036	0.14	0.59
Toluene	108-88-3	0.0069	0.031	0.12	4.6

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	122
4-Bromofluorobenzene	460-00-4	78-121	106
Toluene-d8	2037-26-5	92-109	104

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 AAFES		
Lab ID:	1512112-04A	**Date/Time Analyzed:**	12/10/15 06:54 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.56
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121013

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	64	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	120
4-Bromofluorobenzene	460-00-4	79-114	63 Q
Toluene-d8	2037-26-5	89-108	101

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 AAFES Lab Duplicate		
Lab ID:	1512112-04AA	**Date/Time Analyzed:**	12/10/15 07:44 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.56
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121014

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	64	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	127
4-Bromofluorobenzene	460-00-4	79-114	65 Q
Toluene-d8	2037-26-5	89-108	105

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 AAFES		
Lab ID:	1512112-04B	**Date/Time Analyzed:**	12/10/15 06:54 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.56
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121013sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.027	0.025	0.25	1.0
Ethyl Benzene	100-41-4	0.0095	0.034	0.14	0.47
m,p-Xylene	108-38-3	0.0056	0.034	0.27	1.8
o-Xylene	95-47-6	0.0084	0.034	0.14	0.61
Toluene	108-88-3	0.0065	0.029	0.12	4.9

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	122
4-Bromofluorobenzene	460-00-4	78-121	107
Toluene-d8	2037-26-5	92-109	105

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 AAFES Lab Duplicate		
Lab ID:	1512112-04BB	**Date/Time Analyzed:**	12/10/15 07:44 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.56
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121014sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.027	0.025	0.25	1.0
Ethyl Benzene	100-41-4	0.0095	0.034	0.14	0.47
m,p-Xylene	108-38-3	0.0056	0.034	0.27	1.8
o-Xylene	95-47-6	0.0084	0.034	0.14	0.63
Toluene	108-88-3	0.0065	0.029	0.12	5.0

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	122
4-Bromofluorobenzene	460-00-4	78-121	106
Toluene-d8	2037-26-5	92-109	106

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 FD		
Lab ID:	1512112-05A	**Date/Time Analyzed:**	12/10/15 08:28 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.62
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121015

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	66	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	124
4-Bromofluorobenzene	460-00-4	79-114	60 Q
Toluene-d8	2037-26-5	89-108	101

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 FD		
Lab ID:	1512112-05B	**Date/Time Analyzed:**	12/10/15 08:28 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.62
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121015sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.028	0.026	0.26	0.78
Ethyl Benzene	100-41-4	0.0098	0.035	0.14	0.13 J
m,p-Xylene	108-38-3	0.0058	0.035	0.28	0.28
o-Xylene	95-47-6	0.0087	0.035	0.14	0.077 J
Toluene	108-88-3	0.0068	0.030	0.12	2.0

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	119
4-Bromofluorobenzene	460-00-4	78-121	102
Toluene-d8	2037-26-5	92-109	102

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 LOBBY		
Lab ID:	1512112-06A	**Date/Time Analyzed:**	12/10/15 09:12 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.72
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121016

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	70	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	128
4-Bromofluorobenzene	460-00-4	79-114	61 Q
Toluene-d8	2037-26-5	89-108	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 LOBBY		
Lab ID:	1512112-06B	**Date/Time Analyzed:**	12/10/15 09:12 PM
Date/Time Collected:	12/2/15 09:00 AM	**Dilution Factor:**	1.72
Media:	6 Liter Summa Canister (SIM Certified Cals	**Instrument/Filename:**	msde.i / e121016sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.030	0.027	0.27	1.0
Ethyl Benzene	100-41-4	0.010	0.037	0.15	0.47
m,p-Xylene	108-38-3	0.0062	0.037	0.30	1.8
o-Xylene	95-47-6	0.0093	0.037	0.15	0.66
Toluene	108-88-3	0.0072	0.032	0.13	4.4

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	120
4-Bromofluorobenzene	460-00-4	78-121	105
Toluene-d8	2037-26-5	92-109	107

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 GRAB		
Lab ID:	1512112-07A	**Date/Time Analyzed:**	12/10/15 09:58 PM
Date/Time Collected:	12/2/15 05:00 PM	**Dilution Factor:**	1.33
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121017

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	54	Not Detected

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	122
4-Bromofluorobenzene	460-00-4	79-114	63 Q
Toluene-d8	2037-26-5	89-108	102

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	AOC92151202 GRAB		
Lab ID:	1512112-07B	**Date/Time Analyzed:**	12/10/15 09:58 PM
Date/Time Collected:	12/2/15 05:00 PM	**Dilution Factor:**	1.33
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e121017sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.023	0.021	0.21	1.0
Ethyl Benzene	100-41-4	0.0081	0.029	0.12	0.41
m,p-Xylene	108-38-3	0.0048	0.029	0.23	1.3
o-Xylene	95-47-6	0.0072	0.029	0.12	0.49
Toluene	108-88-3	0.0056	0.025	0.10	3.9

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	121
4-Bromofluorobenzene	460-00-4	78-121	107
Toluene-d8	2037-26-5	92-109	106

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1512112-08A	**Date/Time Analyzed:**	12/10/15 02:30 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121008a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	41	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	118
4-Bromofluorobenzene	460-00-4	79-114	107
Toluene-d8	2037-26-5	89-108	104

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	Lab Blank		
Lab ID:	1512112-08B	**Date/Time Analyzed:**	12/10/15 02:30 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121008sima

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.017	0.016	0.16	0.045 J
Ethyl Benzene	100-41-4	0.0061	0.022	0.087	Not Detected U
m,p-Xylene	108-38-3	0.0036	0.022	0.17	0.0092 J
o-Xylene	95-47-6	0.0054	0.022	0.087	Not Detected U
Toluene	108-88-3	0.0042	0.019	0.075	0.0084 J

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	116
4-Bromofluorobenzene	460-00-4	78-121	104
Toluene-d8	2037-26-5	92-109	105

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	CCV		
Lab ID:	1512112-09A	**Date/Time Analyzed:**	12/10/15 09:35 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121002a

Compound	CAS#	%Recovery
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	113
4-Bromofluorobenzene	460-00-4	79-114	105
Toluene-d8	2037-26-5	89-108	100

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	CCV		
Lab ID:	1512112-09B	**Date/Time Analyzed:**	12/10/15 09:35 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121002sima

Compound	CAS#	%Recovery
Benzene	71-43-2	91
Ethyl Benzene	100-41-4	104
m,p-Xylene	108-38-3	108
o-Xylene	95-47-6	108
Toluene	108-88-3	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	112
4-Bromofluorobenzene	460-00-4	78-121	106
Toluene-d8	2037-26-5	92-109	99

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	LCS		
Lab ID:	1512112-10A	**Date/Time Analyzed:**	12/10/15 10:17 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121003a

Compound	CAS#	%Recovery
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	112
4-Bromofluorobenzene	460-00-4	79-114	106
Toluene-d8	2037-26-5	89-108	100

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	LCSD		
Lab ID:	1512112-10AA	**Date/Time Analyzed:**	12/10/15 10:58 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121004a

Compound	CAS#	%Recovery
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	69-132	111
4-Bromofluorobenzene	460-00-4	79-114	110
Toluene-d8	2037-26-5	89-108	96

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	LCS		
Lab ID:	1512112-10B	**Date/Time Analyzed:**	12/10/15 10:17 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121003sima

Compound	CAS#	%Recovery
Benzene	71-43-2	103
Ethyl Benzene	100-41-4	119
m,p-Xylene	108-38-3	123
o-Xylene	95-47-6	125
Toluene	108-88-3	114

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	112
4-Bromofluorobenzene	460-00-4	78-121	109
Toluene-d8	2037-26-5	92-109	100

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
JBLM AOC 9-2

Client ID:	LCSD		
Lab ID:	1512112-10BB	**Date/Time Analyzed:**	12/10/15 10:58 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e121004sima

Compound	CAS#	%Recovery
Benzene	71-43-2	102
Ethyl Benzene	100-41-4	119
m,p-Xylene	108-38-3	124
o-Xylene	95-47-6	126 Q
Toluene	108-88-3	114

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	84-139	111
4-Bromofluorobenzene	460-00-4	78-121	108
Toluene-d8	2037-26-5	92-109	99

* % Recovery is calculated using unrounded analytical results.

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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 SCOTT ELKIND

Collected by: (Print and Sign) TOM MALAMAKAL

Company SEALASKA ENVIRONMENTAL Email SCOTT.ELKIND@SEALASKA.COM

Address 18743 FRONT ST STE 201 City POULSBO State WA Zip 98370

Phone 360-626-3991 Fax 360-598-3116

Project Info:

P.O. # REQ-2722

Project # 10644.001.015

Project Name JBLM AOC 9-2

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	AOC92151202SUPPLY	D644	12-2-2015	9:20	TO-15 BTEX, TPH-G	-30	-7		
02A	AOC92151202 CONF	33898	12-2-2015	9:00	TO-15 BTEX, TPH-G	-30	-7		
03A	AOC92151202 CUST	34259	12-2-2015	9:00	TO-15 BTEX, TPH-G	-30	-6.5		
04A	AOC92151202 AAFES	D280	12-2-2015	9:00	TO-15 BTEX, TPH-G	-28	-6		
05A	AOC92151202 FD	11892	12-2-2015	9:00	TO-15 BTEX, TPH-G	-30	-5		
06A	AOC92151202 LOBBY	D707	12-2-2015	9:00	TO-15 BTEX, TPH-G	-30	-7		
07A	AOC92151202 GRAB	23886	12-2-2015	17:00	TO-15 BTEX, TPH-G	-30	GRAB		

Relinquished by: (signature) Date/Time: Scott Thomas 12/3/15, 1100

Received by: (signature) Date/Time: WHEATL 12-5-15 0900

Relinquished by: (signature) Date/Time

Received by: (signature) Date/Time

Relinquished by: (signature) Date/Time

Received by: (signature) Date/Time

Notes:

GRAB = INSTATANEOUS SAMPLE W/O REGULATOR

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		N/A	Good	(Yes) No None	1512112

Form 1293 rev.11

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1/13/2016
Mr. Scott Elkind
Sealaska Environmental Services, LLC
18743 Front St NE, Suite 201
PO Box 869
Poulsbo WA 98370

Project Name: JBLM AOC 9-2
Project #:
Workorder #: 1512551

Dear Mr. Scott Elkind

The following report includes the data for the above referenced project for sample(s) received on 12/30/2015 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 #: 1512551

Work Order Summary

CLIENT:	Mr. Scott Elkind Sealaska Environmental Services, LLC 18743 Front St NE, Suite 201 PO Box 869 Poulsbo, WA 98370	**BILL TO:**	Ms. Sandi Walker Sealaska Environmental Services, LLC 13810 SE Eastgate Way Suite 420 Bellevue, WA 98005
PHONE:	360-930-3187	**P.O. #**	REQ-2722
FAX:		**PROJECT #**	JBLM AOC 9-2
DATE RECEIVED:	12/30/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	01/13/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AOC9-2-151228SVE 1000	TO-15	Tedlar Bag	Tedlar Bag
02A	AOC9-2-151228SVE 1300	TO-15	Tedlar Bag	Tedlar Bag
03A	AOC9-2-151228SVE-BG 1305	TO-15	Tedlar Bag	Tedlar Bag
03AA	AOC9-2-151228SVE-BG 1305 Lab Duplicate	TO-15	Tedlar Bag	Tedlar Bag
04A	AOC9-2-151228SVE 1530	TO-15	Tedlar Bag	Tedlar Bag
05A	AOC9-2-151228SVE 1800	TO-15	Tedlar Bag	Tedlar Bag
06A	AOC9-2-151228SVE-BG 1805	TO-15	Tedlar Bag	Tedlar Bag
07A	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 01/13/16

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

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

LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
Sealaska Environmental Services, LLC
Workorder# 1512551

Six 1 Liter Tedlar Bag samples were received on December 30, 2015. 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.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

Requirement	***TO-15 DoD QSM 5.0***	***ATL Modifications***
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
DoD QSM 5.0 Section 2.2.1 PT Requirement	Two PT samples per year for each analyte-matrix-method combination are required.	Not all analyte-matrix-method combinations on the scope of accreditation are available from the current PT providers.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv and 0.8 ppbv for compounds reported at 2.0 ppbv) may be false positives.

Surrogate recovery for 1,2-Dichloroethane-d4 did not meet in-house generated control limits in LCS analyzed 0n 12/31/15 but was within laboratory acceptance limits of 70-130%.

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

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-151228SVE 1000		
Lab ID:	1512551-01A	**Date/Time Analyzed:**	12/31/15 10:57 AM
Date/Time Collected:	12/28/15 10:00 AM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17123108

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	0.66 J
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	3.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	610

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	84
4-Bromofluorobenzene	460-00-4	74-122	120
Toluene-d8	2037-26-5	82-119	96

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-151228SVE 1300		
Lab ID:	1512551-02A	**Date/Time Analyzed:**	12/31/15 12:06 PM
Date/Time Collected:	12/28/15 01:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17123109

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	0.80 J
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	2.7
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	820

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	85
4-Bromofluorobenzene	460-00-4	74-122	120
Toluene-d8	2037-26-5	82-119	95

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-151228SVE-BG 1305		
Lab ID:	1512551-03A	**Date/Time Analyzed:**	12/31/15 12:32 PM
Date/Time Collected:	12/28/15 01:05 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17123110

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	0.41 J
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	3.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	490

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	84
4-Bromofluorobenzene	460-00-4	74-122	119
Toluene-d8	2037-26-5	82-119	93

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-151228SVE-BG 1305 Lab Dupli		
Lab ID:	1512551-03AA	**Date/Time Analyzed:**	12/31/15 03:38 PM
Date/Time Collected:	12/28/15 01:05 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17123117

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	0.44 J
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	3.1
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	410

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	82
4-Bromofluorobenzene	460-00-4	74-122	122
Toluene-d8	2037-26-5	82-119	98

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-151228SVE 1530		
Lab ID:	1512551-04A	**Date/Time Analyzed:**	12/31/15 12:59 PM
Date/Time Collected:	12/28/15 03:30 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17123111

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	0.89 J
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	2.9
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	1000

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	83
4-Bromofluorobenzene	460-00-4	74-122	120
Toluene-d8	2037-26-5	82-119	94

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-151228SVE 1800		
Lab ID:	1512551-05A	**Date/Time Analyzed:**	12/31/15 01:25 PM
Date/Time Collected:	12/28/15 06:00 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17123112

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	Not Detected U
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	2.5
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	740

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	84
4-Bromofluorobenzene	460-00-4	74-122	118
Toluene-d8	2037-26-5	82-119	93

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	AOC9-2-151228SVE-BG 1805		
Lab ID:	1512551-06A	**Date/Time Analyzed:**	12/31/15 01:51 PM
Date/Time Collected:	12/28/15 06:05 PM	**Dilution Factor:**	1.00
Media:	1 Liter Tedlar Bag	**Instrument/Filename:**	msd17.i / 17123113

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	0.44 J
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	3.0
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	820

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	84
4-Bromofluorobenzene	460-00-4	74-122	119
Toluene-d8	2037-26-5	82-119	95

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

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Client ID:	Lab Blank		
Lab ID:	1512551-07A	**Date/Time Analyzed:**	12/31/15 10:21 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17123107a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.47	1.3	1.6	Not Detected U
Ethyl Benzene	100-41-4	0.53	1.7	2.2	Not Detected U
m,p-Xylene	108-38-3	0.37	1.7	2.2	Not Detected U
o-Xylene	95-47-6	0.51	1.7	2.2	Not Detected U
Toluene	108-88-3	0.35	1.5	1.9	Not Detected U
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	200	Not Detected U

U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	84
4-Bromofluorobenzene	460-00-4	74-122	96
Toluene-d8	2037-26-5	82-119	95

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	CCV		
Lab ID:	1512551-08A	**Date/Time Analyzed:**	12/31/15 07:19 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17123102a

Compound	CAS#	%Recovery
Benzene	71-43-2	85
Ethyl Benzene	100-41-4	104
m,p-Xylene	108-38-3	111
o-Xylene	95-47-6	107
Toluene	108-88-3	92
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	88
4-Bromofluorobenzene	460-00-4	74-122	112
Toluene-d8	2037-26-5	82-119	102

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCS		
Lab ID:	1512551-09A	**Date/Time Analyzed:**	12/31/15 07:44 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17123103a

Compound	CAS#	%Recovery
Benzene	71-43-2	80
Ethyl Benzene	100-41-4	98
m,p-Xylene	108-38-3	102
o-Xylene	95-47-6	101
Toluene	108-88-3	89
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	77
4-Bromofluorobenzene	460-00-4	74-122	108
Toluene-d8	2037-26-5	82-119	99

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
JBLM AOC 9-2

Client ID:	LCSD		
Lab ID:	1512551-09AA	**Date/Time Analyzed:**	12/31/15 08:09 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd17.i / 17123104a

Compound	CAS#	%Recovery
Benzene	71-43-2	80
Ethyl Benzene	100-41-4	99
m,p-Xylene	108-38-3	101
o-Xylene	95-47-6	102
Toluene	108-88-3	87
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	79-128	86
4-Bromofluorobenzene	460-00-4	74-122	110
Toluene-d8	2037-26-5	82-119	101

* % Recovery is calculated using unrounded analytical results.

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(916) 985-1000 FAX (916) 985-1020

Page 1 of 1

Project Manager: SCOTT ELKIND
Collected by: (Print and Sign) BOB THOMAS / TOM MALIWAKAH
Company: SCHWABE ENVIRONMENTAL Email: scott.elkind@[illegible]
Address: 18748 [illegible] City: [illegible] State: WA Zip: 98370
Phone: 360-626-3811 Fax: 360-598-3112

Project Info:
P.O. #: REQ - 2722
Project #:
Project Name: [illegible] AOC 9-2

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 (psi)
01A	AOC 9-2-151228SVE 1000	TEDLAR	12-28-15	10:00	TO-15 BTEX, TPH-G				
02A	AOC 9-2-151228SVE 1300	TEDLAR	12-28-15	13:00	TO-15 BTEX, TPH-G				
03A	AOC 9-2-151228SVE-30 1305	TEDLAR	12-28-15	13:05	TO-15 BTEX, TPH-G				
04A	AOC 9-2-151228SVE 1530	TEDLAR	12-28-15	15:30	TO-15 BTEX, TPH-G				
05A	AOC 9-2-151228SVE 1800	TEDLAR	12-28-15	18:00	TO-15 BTEX, TPH-G				
06A	AOC 9-2-151228SVE-30 1805	TEDLAR	12-28-15	18:05	TO-15 BTEX, TPH-G				

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	Notes:
[signature] 12-29-15 9:00	[illegible] 12-30-15 1110	
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	(Yes) No None	1512551