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By Alameda County Environmental Health 11:47 am, Jun 03, 2015

June 1, 2015

Jerry Wickham PG, CHG
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6540

Subject: Vapor Intrusion Evaluation Report for Building 200 for the Former Pacific Electric Motors Site 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411)

Dear Mr. Wickham:

Enclosed is the Soil Vapor Intrusion Assessment Report for Building 200 for the Former Pacific Electric Motors Site 1009 66th Avenue, Oakland, California; Alameda County Environmental Health (ACEH) Fuel Leak Case Number RO0000411 ("the Site"). This report was prepared in response to a request from ACEH to evaluate potential vapor intrusion concerns related to residual volatile organic compounds that may be in soil, soil gas, and groundwater at the Site.

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or comments, please call Ms. Erica Kalve of ARCADIS at (415) 491-4530 extension 22, or me at (510) 434-5071.

Sincerely,

Tim Simon
Aspire Public Schools

Enclosure

ARCADIS
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College for Certain, LLC

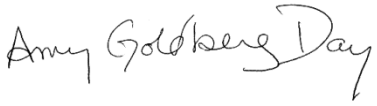
Vapor Intrusion Evaluation Report for Building 200

Former Pacific Electric Motors Site
1009 66th Avenue
Oakland, California
(Fuel Leak Case Number RO0000411)

June 1, 2015

ARCADIS

Erica Kalve, P.G.
Senior Geologist



Amy Goldberg Day
Principal Toxicologist

Angeline Tan
Staff Environmental Engineer

Vapor Intrusion Evaluation Report for Building 200

Former Pacific Electric Motors Site, 1009 66th Avenue, Oakland, California
(Fuel Leak Case Number RO0000411)

Prepared for:
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Our Ref.:
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Date:
June 1, 2015

Table of Contents

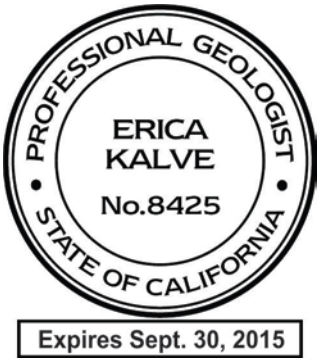
Appendices

Acronyms and Abbreviations

µg/m^3	micrograms per cubic meter
ACEH	Alameda County Environmental Health
ACPWA	Alameda County Public Works Agency
ARCADIS	ARCADIS U.S., Inc.
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
CFC	College for Certain, LLC
COPCs	constituents of potential concern
DTSC	Department of Toxic Substances Control
mL	milliliters
MTBE	methyl tertiary-butyl ether
PCBs	polychlorinated biphenyls
PEM	Former Pacific Electric Motors
QA	quality assurance
Site	former Pacific Electric Motors (PEM) Facility located at 1009 66th Avenue in Oakland, California
SVE/AS	soil-vapor extraction/air sparging
TBA	tert-Butyl alcohol
TPHg	total petroleum hydrocarbons as gasoline
TSCA	Toxic Substance Control Act
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
UST	underground storage tank

Certification

All hydrogeologic and geologic information, conclusions, and recommendations in this document have been prepared under the supervision of and reviewed by an ARCADIS U.S., Inc., California Professional Geologist .*



June 1, 2015

Erica Kalve, P.G.
Senior Geologist
California Professional Geologist (8245)

Date

1. ***A professional geologist's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.**

1. Introduction

ARCADIS has prepared this Vapor Intrusion Evaluation Report for Building 200 on behalf of College for Certain, LLC (CFC) for the Former Pacific Electric Motors (PEM) Facility located at 1009 66th Avenue in Oakland, California ("the Site"; Figure 1). Post remedial soil and groundwater sampling has confirmed that remedial actions have successfully reduced concentrations of constituents of potential concern (COPCs) in soil and groundwater. Alameda County Department of Environmental Health (ACEH) provided conditional approval of the Vapor Intrusion Evaluation Work Plan dated July 2014, which included a combined soil gas and indoor air sampling plan (ARCADIS 2014b). The soil investigation plan addressed vapor intrusion concerns in the vicinity of proposed building 300; a revised work plan dated September 12, 2014 (ARCADIS 2014c) was submitted to address vapor intrusion concerns in the vicinity of building 200. Additionally, as requested by ACEH, a work plan addendum was submitted on November 24, 2014 (ARCADIS 2014d) to provide additional information regarding the proposed crawl space sampling approach. ACEH provided work plan approval for the vapor intrusion evaluation of building 200 in a letter dated December 18, 2014.

The purpose of this vapor intrusion evaluation is to assess the potential for vapor intrusion to occur into existing Building 200 (Figure 2). This report summarizes field activities and the results of the installation and sampling of five shallow vapor probes at the site (SVP-6 through SVP-10; Figure 3), and sampling of two crawl space locations and two outdoor air locations. The work summarized in this report was completed in accordance with the Department of Toxic Substances Control (DTSC) Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (the DTSC Vapor Intrusion Guidance Document; DTSC 2011), and the *Vapor Intrusion Evaluation Work Plan* (ARCADIS 2014; the work plan) submitted to the ACEH on July 11, 2014.

2. Site Description and History

2.1 Background

The Site is 2.51 acres and is located on the northwestern side of 66th Avenue between East 14th Street and San Leandro Street (Figure 1). The area around the Site is developed with a mixture of commercial, industrial, government, and multi-family residential buildings. The Site is currently owned by CFC.

The first industrial development of the property was in about 1948 when the two buildings were constructed for the former Pacific Electric Motors (PEM) facility. PEM

occupied the Site from 1948 to 2001. Activities conducted at the Site by PEM included manufacturing specialty magnets, power supplies, and components, and repairing motors, generators, transformers, and magnets. A 2,000-gallon gasoline underground storage tank (UST) was reportedly installed at the Site by PEM in 1975. In addition, the gasoline shed in the fueling area may have stored vehicle lubricants and oil for vehicle maintenance.

The structures that were on the property were demolished between November 2009 and February 2010. The Site has been redeveloped into the Aspire Golden State College Preparatory Academy, which serves grades 6 through 12 and has capacity for 570 students; the school opened in August 2011 (Figure 2). The school occupies approximately 1.4 acres and consists of the following site features:

- Six two-story buildings (approximately 41,430 square feet total including 24 full-sized classrooms, 4 labs, 3 girls and 3 boys restrooms, and 4 staff restrooms)
- Asphalt-paved parking area with access via two driveways on 66th Avenue (one for ingress and one for egress)
- Asphalt-paved area for recreation
- Asphalt-paved and concrete pedestrian walkways
- Planter and landscaped areas

As part of the redevelopment of the Site, the ground surface comprised of roadways, sidewalks, parking areas, buildings, and planter areas is serving as a cap to mitigate potential exposure to remaining polychlorinated biphenyls (PCBs) containing soil at the Site. Additionally, a new building is currently being constructed and a vapor intrusion mitigation system was recently installed as part of the new building construction.

2.2 Environmental Site History

The Revised Corrective Action Plan (Revised CAP) summarized the results of previous investigations, presented the site conceptual model, quantified the baseline health risk with assumed exposures to the COPCs, developed site-specific risk-based cleanup goals, evaluated potential remedies, and presented an implementation plan for the selected remedies (ARCADIS 2009a). The Revised CAP was approved by the ACEH in their letter to Aspire Charter Schools dated August 13, 2009 (ACEH 2009).

Several remedial actions were implemented in accordance with the Revised CAP including:

- Soil excavation and removal of approximately 8,662 tons of soil containing elevated concentrations of lead, arsenic, PCBs, benzene, and total petroleum hydrocarbons as gasoline (TPHg); ARCADIS 2014.

- Air injection and soil-vapor extraction to reduce concentrations of TPHg, benzene, toluene, ethylbenzene, and xylenes, (BTEX), tert-Butyl alcohol (TBA), and methyl tertiary-butyl ether (MTBE) in groundwater, soil, and soil gas. Two phases of soil-vapor extraction/air sparging (SVE/AS) were implemented and an estimated 798 pounds of fuel vapors were recovered from the Site (ARCADIS 2014a).

- Areas of polychlorinated-biphenyl (PCB)-containing soil (and building materials) were remediated in accordance with the Revised CAP and Self-Implementing Cleanup Plan (ARCADIS 2009b, ARCADIS 2009C).

The implementation of the Revised CAP was reported to ACEH (and USEPA) in the report titled, Soil Removal Action Completion Report, dated September 15, 2010 (ARCADIS 2010b). Removal of soil and building materials affected by PCBs was documented in a letter report that was prepared in accordance with the Toxic Substance Control Act (TSCA) and transmitted to USEPA on August 13, 2010 ("the TSCA Report"; ARCADIS 2010a).

As documented in the Groundwater Monitoring Report (ARCADIS 2014a), the analytical results for groundwater samples collected at the Site indicate that concentrations of TPHg, BTEX, and MTBE have decreased over time and remain low. This decreasing trend in concentrations is likely the direct result of the excavation and off-site disposal of fuel-affected soil that took place at the Site in 1995, 2002, and 2010, and the operation of the soil-vapor extraction/air sparging (SVE/AS) system. Additionally, the development plan for the property included the construction of buildings with a raised foundation approximately 18 inches above the ground to create a vented "crawl space" to create a passive system to further reduce the potential for soil vapors to intrude to the existing onsite buildings.

3. Soil Vapor Probe Installation

To assess the vapor intrusion potential in the vicinity of Building 200, ARCADIS installed five soil vapor probes (SVP-6 through SVP-10) around Building 200. Prior to

installation, drilling permits were obtained from the Alameda County Public Works Agency, Water Resources Section (ACPWA) and a grouting inspection was scheduled with an agent from the county (included in Appendix A). Utility clearance was also performed at each location prior to initiating intrusive activities.

3.1 Construction of Soil Vapor Probes

The approximate locations of the soil vapor probes are shown on Figure 3. Soil vapor monitoring points were installed in accordance with the DTSC Active Soil Gas Investigation Advisory (April 2012) guidance (DTSC 2012). Table 1 provides construction details for SVP-6 through SVP-10.

Each soil vapor probe location was advanced to the total depth of 5 feet below ground surface (bgs) using mechanical auger methods (mechanical methods were required to penetrate the cap). Following the advancement of each soil vapor probe location to its final depth, a 6-inch-long, 0.375-inch-outer-diameter stainless steel soil vapor screen was set in a 1-foot interval of standard sand pack, allowing approximately 3 inches of sand above and below the screen. Teflon® tubing was connected to the soil vapor screen and capped with a vapor-tight stainless steel Swagelok cap at the surface to eliminate the potential for barometric pressure fluctuations to induce vapor transport between the subsurface and the atmosphere. The vapor-tight cap was installed to allow equilibration of soil vapor concentrations to commence immediately after installation.

A 6-inch interval of dry, granular bentonite was placed above the sand pack, followed by hydrated granular bentonite to 1 foot bgs. The sand pack is used around the screened interval of each sample probe to allow soil vapor from the adjacent soil to reach the probes. Dry granular bentonite is used to ensure that the hydrated bentonite does not seal the vapor probe screen and inhibit the collection of soil vapor. The surface of each probe location was secured with a traffic-rated well box set in approximately 6 inches of concrete, flush with the surface. Soil vapor probe construction logs detailing probe schematics are shown on Table 1.

3.2 Waste Management

Soil cuttings generated during drilling operations were containerized in one properly labeled Department of Transportation-approved, 55-gallon drum and stored onsite. Soil cuttings will be removed by disposal contractor and be transported to an appropriate disposal facility.

4. Soil Vapor Sampling

Soil vapor sampling was conducted in accordance with DTSC's Active Soil Gas Investigation Advisory (DTSC 2012). Shut-in tests, leak check tests and purge volume tests were conducted on each of the soil vapor monitoring points as described in the work plan. Purge volume calculations, field conditions, flow rate, pump specifics, and other applicable information were recorded by field personnel on soil vapor sample collection logs and are included as Appendix B of this report. This section summarizes the sampling procedures and analytical results associated with the January 17, 2015 soil vapor sampling event.

4.1 Sampling Procedures

The shut-in test was conducted by assembling the above-ground valves, lines and fittings downstream from the top of the soil gas monitoring point. The system was evacuated to a minimum measured vacuum of about 100 inches of water using a purge pump. The test was conducted while the sampling canister is attached with its valve in the closed position. The vacuum gauge was connected to the system with a "T"-fitting for at least one minute or longer with the field staff observing the reading. If there was any observable loss of vacuum, the fittings were adjusted until the vacuum in the sample train does not noticeably dissipate. After the shut-in test is validated, the sampling train was not altered and the quantitative leak test was performed.

The quantitative leak test was conducted on the sample manifold using the shroud and helium methodologies and helium was measured in the field using a handheld gas meter at the time of sample collection. The helium shroud concentrations were noted in the field notes (Appendix B) and helium was added to the shroud throughout the sample collection process to maintain the target concentration. Analytical samples were analyzed for helium using American Society for Testing and Materials (ASTM) Method 1946 to confirm that no significant leaks were present at the time of sample collection (Table 2).

The purge volume of 1,390 milliliters (mL) previously performed during a purge test at soil vapor point SVP-1 in August 2014 was used as a guide for each of the purge volumes for the other soil gas monitoring point. Following the completion of the helium leak test, the soil vapor samples were then collected using a 1-liter batch-certified SUMMA™ canister. Following the collection of the SUMMA canister sample, an additional soil vapor sample was collected using a TO-17 sorbent tube and low-flow air pump at a flow rate of ≤ 170 mL/min.

During the soil vapor sampling activities, one field blank was also submitted to the laboratory for quality assurance (QA) purposes.

The soil vapor samples were shipped by FedEx under appropriate chain-of-custody protocols to Eurofins Air Toxics Inc., in Folsom, California, for analysis of the following:

- TPHg, BTEX, MTBE, and naphthalene by Modified USEPA Method TO-15
- Naphthalene by Modified USEPA Method TO-17
- Fixed gases, including oxygen, carbon dioxide, methane, and helium by Modified ASTM Method D-1946

4.2 Soil Vapor Analytical Results

Soil vapor samples were collected at the site on January 17, 2015 from soil vapor probes SVP-7 and SVP-8, crawl spaces (CS-1 and CS-2), and outdoor air (OA-1 and OA-2). Soil vapor samples were not collected from soil vapor probes SVP-6, SVP-9 and SVP-10 because water entered the sample train in soil vapor probes (SVP-6 and SVP-9); and tight vapor conditions in SVP-10. The analytical results are presented in Tables 2 and 3 and Figure 3 and detected concentrations are discussed in detail below.

- Benzene was detected above its laboratory reporting limit at concentrations ranging from 0.51 micrograms per cubic meter (µg/m^3) in the outdoor air sample collected from OA-2 to 3.6 µg/m^3 in soil vapor sample collected from SVP-8.
- Toluene was detected above its laboratory reporting limit at concentrations ranging from 1.2 µg/m^3 in soil vapor sample collected from OA-2 to 7.4 µg/m^3 in soil vapor sample collected from SVP-8.
- Ethylbenzene was detected above its laboratory reporting limit at concentrations ranging from 0.23 µg/m^3 in soil vapor sample collected from OA-2 to 1.0 µg/m^3 in soil vapor sample collected from CS-2. Ethylbenzene was not detected above the laboratory reporting limit in soil gas.
- M,p-xylene was detected above its laboratory reporting limit at concentrations ranging from 0.73 µg/m^3 in the outdoor air sample collected from OA-2 to 8.7 µg/m^3 in soil vapor sample collected from SVP-8.

- O-xylene was detected above its laboratory reporting limit at concentrations ranging from 0.28 µg/m^3 in the outdoor air sample collected from OA-2 to 3.7 µg/m^3 in soil vapor sample collected from SVP-8.

- TPHg was detected above its laboratory reporting limit at concentrations ranging from 190 µg/m^3 in the crawl space sample collected from CS-1 to 3,100 µg/m^3 in soil vapor sample collected from SVP-8.

With the exception of benzene, the other detected COPCs were below their respective health risk-based soil vapor thresholds (Table 3). Benzene was detected above the residential regional screening level (RSL) for indoor air of 0.084 µg/m^3 in the two crawl space and two outdoor air samples. Table 3 and Figure 3 present summaries of the analytical results from the samples collected during the January 17, 2014 sample event. Laboratory analytical reports are included as Appendix C.

4.3 Fixed Gases and Biodegradation

The presence and concentration of oxygen and methane can be an indication of biodegradation of soil vapor in the subsurface. Typically, a decrease in hydrocarbon concentrations concurrent with a decrease in oxygen and an increase in methane are indicative of aerobic biodegradation of hydrocarbons. Fixed gases analytical data are summarized in Table 2. Laboratory analytical reports are included as Appendix C. As shown in Table 2, oxygen percentage measured at SVP-8 was 17 percent and at SVE-7 was 2.2 percent. Carbon dioxide percentages were 0.61 percent at SVP-8 and 2.8 percent at SVP-7. The oxygen percentages and the presence and concentrations of methane and oxygen at the two sample probe depths suggest an active biodegradation zone at each soil vapor probe location.

5. Soil Vapor Sampling Data Quality Assurance

For data QA purposes, multiple QA techniques were employed during the January 17, 2015 soil vapor sampling. Both shut-in and helium leak tests were performed during the soil vapor sample collection period to ensure integrity of the sampling system and to demonstrate that ambient air was not being permitted into the sampling train or entering the subsurface, potentially biasing the samples. In addition, one field blank was submitted to assess background contamination potentially due to equipment.

5.1 Leak Test Analytical Results

During the January 2015 soil vapor sampling event, helium was not detected in any of the soil vapor samples, supporting the sampling train integrity.

6. Conclusion and Recommendations

Soil gas concentrations were screened against health based screening criteria developed for the protection of the resident using the methodology recommended by DTSC (DTSC 2014). The low levels of benzene present in soil gas, coupled with the ambient levels of benzene in outdoor air, indicate that the concentrations detected in the crawl space samples may not be attributable to vapor intrusion. In fact, in reviewing a summary of ambient air monitoring data for the bay area, benzene is commonly detected in outdoor air. A nearby monitoring location is located in Berkeley and the annual average concentration of benzene in outdoor air is reported for 2008 at 0.875 $\mu g/m^3$ and 2009 at 0.531 $\mu g/m^3$ (BAAQMD 2009).

Since the ambient benzene is likely the majority contributor to the crawl space analytical results ARCADIS does not recommend that indoor air samples be collected. However, though not recommended, an additional indoor air sample event results could be used to verify that indoor air is of the same quality as outdoor air. Additionally, ARCADIS recommends additional soil vapor monitoring to reattempt sample collection at SVP-6, SVP-9, and SVP-10, and to resample SVP-7 and SVP-8 to evaluate change over time.

7. References

ACEH. 2009. Revised CAP approval letter to Aspire Charter Schools dated August 13, 2009 (ACEH 2009)

ARCADIS U.S., Inc. (ARCADIS). 2009a. Revised Corrective Action Plan, Proposed Aspire School Site, 1009 66th Avenue, Oakland, California (Fuel Leak Case No. RO0000411). July 17.

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———. 2010a. TSCA Letter Report August 13, 2010

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———. 2014b. Vapor Intrusion Work Plan, Former Pacific Electric Motors Site, 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411). July.

———.2014c. Revised Vapor Intrusion Evaluation Work Plan , Former Pacific Motors Site, 1009 66th Avenue, Oakland, California. September 12.

———.2014d. Work Plan Addendum for Vapor Intrusion Evaluation of Existing Building, Former Pacific Motors Site, 1009 66th Avenue, Oakland, California. November 24.

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———. 2012. Advisory, Active Soil Gas Investigations. Jointly developed by the California Environmental Protection Agency Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, and San Francisco Regional Water Quality Control Board. April.

———. 2014. Office of Human and Ecological Risk (HERO), Human Health Risk Assessment (HHRA) Note, HERO HHRA Note Number: 3. July.

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Tables

Table 1
Soil Vapor Monitoring Well Construction Details
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Location ID	Total Depth (feet bgs)	Screen Length (inch)	Sand (feet bgs)	Bentonite Chips (feet bgs)	Hydrated Bentonite (feet bgs)	Grout (feet bgs)
SVP-6	5.00	6	4.0 - 5.0	3.5 - 4.0	3.0 - 3.5	0.5 - 3.0
SVP-7	5.00	6	4.0 - 5.0	3.5 - 4.0	3.0 - 3.5	0.5 - 3.0
SVP-8	5.00	6	4.0 - 5.0	3.5 - 4.0	3.0 - 3.5	0.5 - 3.0
SVP-9	5.00	6	4.0 - 5.0	3.5 - 4.0	3.0 - 3.5	0.5 - 3.0
SVP-10	5.00	6	4.0 - 5.0	3.5 - 4.0	3.0 - 3.5	0.5 - 3.0

Notes:
bgs = below ground surface

Table 2
Soil Vapor Analytical Results For Fixed Gases
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Compound Name / Location ID	Oxygen	Methane	Carbon Dioxide	Helium
	(%v)	(%v)	(%v)	(%v)
SVP-6	NS	NS	NS	NS
SVP-7	2.2	0.530	2.8	<0.076
SVP-8	17	0.02	0.61	<0.084
SVP-9	NS	NS	NS	NS
SVP-10	NS	NS	NS	NS

Notes:
< = not detected above the reporting limit
%v = percent volume
NS = not sampled; SVP-6 and SVP-9 could not be sampled due to water coming in the sample train; SVP-10 could not be sampled due to tight vapor conditions.

Table 3
Outdoor Air, Crawl Space and Soil Vapor Analytical Results
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

results reported in micrograms per cubic meter (μg/m3)

Sample ID	Sample Date	Benzene	Toluene	Ethyl Benzene	m,p-Xylene	o-Xylene	MTBE	TPHg	Naphthalene (TO-15)	Naphthalene (TO-17)
Indoor Air Sample Results										
USEPA Residential RSL for Indoor Air/DTSC Note 3		0.084	310	1.1	10	10	11	--	0.083	0.083
OA-1	1/17/2015	**0.55**	1.6	0.32	1.0	0.36	<0.53	<60	<3.9	--
OA-2	1/17/2015	**0.51**	1.2	0.23	0.73	0.28	<0.55	<62	<4.0	--
CS-1	1/17/2015	**0.73**	5.3	0.89	4.3	0.92	<0.54	190	<3.9	--
CS-2	1/17/2015	**0.70**	5.6	1.0	4.7	1.1	<0.58	230	<4.2	--
Soil Gas Sample Results										
Adjusted Soil Gas Screening Level Future Residential Buildings[1]		84	310,000	1,100	100,000	100,000	11,000	--	83	83
SVP-6	1/17/2015	NS	NS	NS	NS	NS	NS	NS	NS	NS
SVP-7	1/17/2015	<2.4	<2.9	<3.3	<3.3	<3.3	<2.7	830	<16	<17
SVP-8	1/17/2015	3.6	7.4	<3.6	8.7	3.7	13	3,100	<18	<17
SVP-9	1/17/2015	NS	NS	NS	NS	NS	NS	NS	NS	NS
SVP-10	1/17/2015	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field blank	1/17/2015	--	--	--	--	--	--	--	--	<17

Notes

Bold indicates result above the screening level
USEPA = United States Environmental Protection Agency
RSL = Regional Screening Level
MTBE = methyl tert-butyl ether
CS = crawl space
1 = Attenuation factor for a future residential building is 0.001 (DTSC 2011).

< = not detected above the reporting limit
-- = not available; not analyzed
NS = not sampled; SVP-6 and SVP-9 could not be sampled due to water coming in the sample train; SVP-10 could not be sampled due to tight vapor conditions.

Reference:
California Department of Toxic Substances Control (DTSC). 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air

Figures

MAP SOURCE: Copyright 1995, Thomas Bros. Map ALAMEDA COUNTY 2002 Edition

0 2,000 4,000 FEET

1009 66TH AVENUE, OAKLAND, CALIFORNIA

SITE VICINITY MAP

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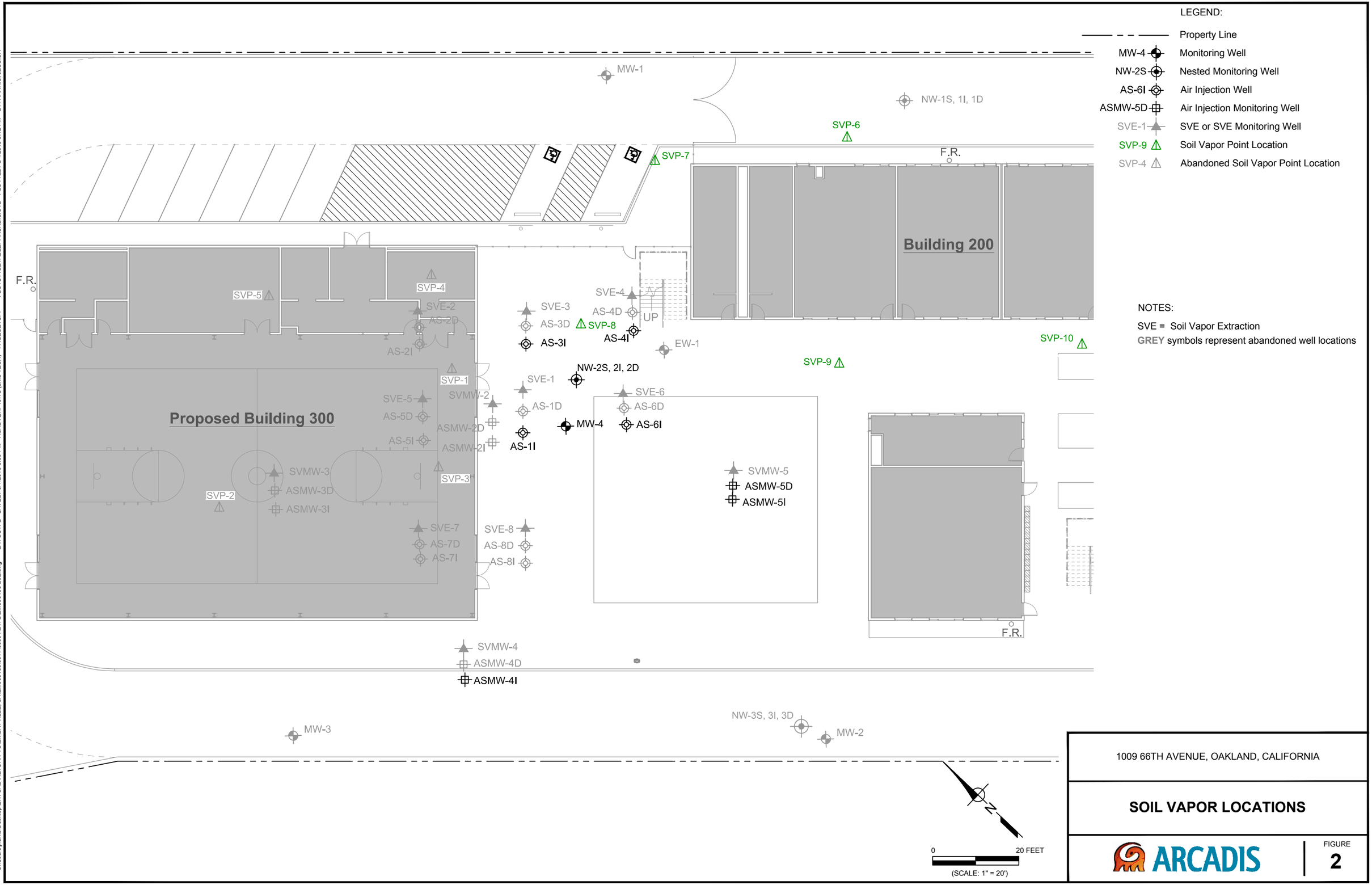
FIGURE 1

DESIGN\003\09155\Figure 1 Site Vicinity - 003-09155.cdr



1009 66TH AVENUE, OAKLAND, CALIFORNIA

SOIL VAPOR LOCATIONS

ARCADIS

FIGURE 2

CITY: EMERYVILLE, CA DIV/GROUP: ENV/CAD DB: A. REYES, J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\RETURN-TO\EMERYVILLE, CA\EM009155\0017\000010\DWG\EM009155 B02.dwg LAYOUT: 2 SAVED: 6/1/2015 5:06 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 6/1/2015 5:42 PM BY: HARRIS, JESSICA

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* LAYOUT: 3 SAVED: 5/22/2015 1:41 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 5/22/2015 4:48 PM BY: HARRIS, JESSICA
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SVP-7	
Benzene	<2.4
Toluene	<2.9
Ethylbenzene	<3.3
m,p-Xylene	<3.3
o-Xylene	<3.3
MTBE	<2.7
TPH-GRO	830
Naph (TO-15)	<16
Naph (TO-17)	<17

CS-2	
Benzene	**0.70**
Toluene	5.6
Ethylbenzene	1.0
m,p-Xylene	4.7
o-Xylene	1.1
MTBE	<0.58
TPH-GRO	23
Naph (TO-15)	<4.2
Naph (TO-17)	---

OA-1	
Benzene	**0.55**
Toluene	1.6
Ethylbenzene	0.32
m,p-Xylene	1.0
o-Xylene	0.36
MTBE	<0.53
TPH-GRO	<60
Naph (TO-15)	<3.9
Naph (TO-17)	---

CS-1	
Benzene	**0.73**
Toluene	5.3
Ethylbenzene	0.89
m,p-Xylene	4.3
o-Xylene	0.92
MTBE	<0.54
TPH-GRO	190
Naph (TO-15)	<3.9
Naph (TO-17)	---

SVP-8	
Benzene	3.6
Toluene	7.4
Ethylbenzene	<3.6
m,p-Xylene	8.7
o-Xylene	3.7
MTBE	13
TPH-GRO	3,100
Naph (TO-15)	<18
Naph (TO-17)	<17

OA-2	
Benzene	**0.51**
Toluene	1.2
Ethylbenzene	0.23
m,p-Xylene	0.73
o-Xylene	0.28
MTBE	<0.55
TPH-GRO	<62
Naph (TO-15)	<4.0
Naph (TO-17)	---

MW-1
NW-1S, 1I, 1D
SVP-6 NS
SVP-7
OA-1
F.R.
CS-2
CS-1
RESTROOMS
Building 200
205 (CLASSROOM)
204 (CLASSROOM)
203 (CANTEEN/ FAMILY ROOM)
202 (CANTEEN/ FAMILY ROOM)
201 (CLASSROOM)
SVE-4
AS-4D
UP
AS-4I
SVE-3
AS-3D
AS-3I
SVP-8
EW-1
SVP-9 NS
SVP-10 NS
NW-2S, 2I, 2D
SVE-1
SVMW-2
AS-1D
ASMW-2D
AS-1I
ASMW-2I
MW-4
SVE-6
AS-6D
AS-6I
SVMW-5
ASMW-5D
ASMW-5I
SVE-8
OA-2

NOTE:

1. Teflon tubing was extended approximately 5-10 feet under the building for the crawl space samples. The sampling canisters were placed at the crawl space access.

LEGEND:

- Property Line
- MW-4 Monitoring Well
- NW-2S Nested Monitoring Well
- AS-6I Air Injection Well
- ASMW-5D Air Injection Monitoring Well
- SVE-1 SVE or SVE Monitoring Well
- SVP-9 Soil Vapor Point Location
- CS-1 Crawl Space Sampling Location[1]
- OA-1 Outdoor Air Sampling Location
- 1 ft x 4 ft Vent
- 2 ft x 4 ft Access / Vent Well Crawl Space
- **GREY** symbols represent abandoned well locations

SVE = Soil Vapor Extraction
MTBE = Methyl Tertiary-Butyl Ether
TPH-GRO = Total Petroleum Hydrocarbons as Gasoline Range Organics
Naph (TO-15) = Naphthalene Sampled Using USEPA Method TO-15
Naph (TO-17) = Naphthalene Sampled Using USEPA Method TO-17
< = Not Detected above the Laboratory Reporting Limit Given
NS = Not Sampled
--- = Not Sampled for Naph (TO-17)
BOLD = Indicates Result above the Screening Level
All Results are in Micrograms per Cubic Meter (µg/m³)

N

0 15 FEET
(SCALE: 1" = 15')

1009 66TH AVENUE, OAKLAND, CALIFORNIA

BUILDING 200 SOIL VAPOR AND CRAWL SPACE LOCATIONS AND ANALYTICAL RESULTS

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FIGURE 3

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Appendix **A**

ACPWA Well Permits

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 12/16/2014 By jamesy

Permit Numbers: W2014-1154 to W2014-1155
Permits Valid from 12/26/2014 to 01/31/2015

Application Id: 1418256858388 **City of Project Site:** Oakland
Site Location: 1009 66th Avenue, Oakland CA 94621
Project Start Date: 12/26/2014 **Completion Date:** 01/31/2015
Assigned Inspector: Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org

Applicant: ARCADIS U.S., Inc. - Angeline Tan **Phone:** 925-296-7829
2999 Oak Road, Suite 300, Walnut Creek, CA 94597
Property Owner: Tim Simon - Aspire Public Schools **Phone:** --
1009 66th Avenue, Oakland, CA 94621
Client: ** same as Property Owner **

Total Due: $530.00
Receipt Number: WR2014-0506 **Total Amount Paid:** $530.00
Payer Name : Hwei Jiuen Tan Paid By: CHECK **PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Investigation-Environmental/Monitorinig Study - 26 Boreholes
Driller: Gregg Drilling - Lic #: 485165 - Method: DP **Work Total: $265.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2014-1154	12/16/2014	03/26/2015	26	8.00 in.	10.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

5. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

6. NOTE:
Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory

agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

7. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

Well Construction-Vapor monitoring well-Vapor monitoring well - 5 Wells
Driller: Gregg Drilling - Lic #: 485165 - Method: DP **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2014-1155	12/16/2014	03/26/2015	SVP-10	3.50 in.	3.00 in.	1.00 ft	5.00 ft
W2014-1155	12/16/2014	03/26/2015	SVP-6	3.50 in.	3.00 in.	1.00 ft	5.00 ft
W2014-1155	12/16/2014	03/26/2015	SVP-7	3.50 in.	3.00 in.	1.00 ft	5.00 ft
W2014-1155	12/16/2014	03/26/2015	SVP-8	3.50 in.	3.00 in.	1.00 ft	5.00 ft
W2014-1155	12/16/2014	03/26/2015	SVP-9	3.50 in.	3.00 in.	1.00 ft	5.00 ft

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Compliance with the above well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate state reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days, including permit number and site map.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or

waterways or be allowed to move off the property where work is being completed.

5. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

6. No changes in construction procedures or well type shall change, as described on this permit application. This permit may be voided if it contains incorrect information.

7. Applicant shall submit the copies of the approved encroachment permit to this office within 10 days.

8. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

9. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

11. Vapor monitoring wells above water level constructed with tubing maybe be backfilled with pancake-batter consistency bentonite. Minimum surface seal thickness is two inches of cement grout around well box.

Vapor monitoring wells above water level constructed with pvc pipe shall have a minimum seal depth (Neat Cement Seal) of 2 feet below ground surface (BGS). Minimum surface seal thickness is two inches of cement grout around well box. All other conditions for monitoring well construction shall apply.

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Appendix **B**

Soil Vapor Sample Collection Logs

TABLE 1
SOIL GAS SAMPLING FIELD DATA
Aspire College

Date	Sample	Canister #	Regulator	Leak test start time	Start Leak Vaccum Pressure (in-Hg)	Leak test stop time	End Leak Vaccum Pressure (in-Hg)	Start Purge Time	End Purge Time	Began sampling Time	Initial vacuum (in-Hg)	End sampling Time	Final vacuum (in-Hg)	He shroud (%)	He detected (PPM)	TO-17 volume collected (mL)	TO-17 collected time	VOC (ppm)	CH_4 (% LEL)	O_2 (%)	
1/17/2015	SVP-6	33882	33882	1021	11.5	1031	11.5	~~1246~~ 1230	1319 ~~1254~~	1320	30.0	—	~~5.0~~	23.0	0.0	—	—	—	—	—	Failed, * water came out
1/17/2015	SVP-7	5669	5669	1034	12.0	1044	12.0	110730	114111	~~1143~~ 1143	28.5	1234	5.0	15.3	0.0	60	1239	0.2	15% LEL	1.2	
1/17/2015	SVP-8	1651	1651	1048	12.0	1058	12.0	141400	144741	1450	29.0	1537	5.0	21.4	0.0	60	1539	0.3	9% LEL	2.2	
1/17/2015	SVP-9	12936	12936	1130	13.0	1140	13.0	150700	154041	1550	29.0	—	~~5.0~~	26.6	0.0	—	—	—	0.0	7.1	Failed, * water came out
1/17/2015	SVP-10	34747	34747	1149	11.5	1159	11.5	160730	164111	1653	29.0	—	—	19.4	0.0	—	—	—	—	—	Failed, **
1/17/2015	Crawl Space -1	35179	35179	—	—	—	—	—	—	0900	30+	1700	5.5	—	—	—	—	—	—	—	
1/17/2015	Crawl Space -2	9557	9557	—	—	—	—	—	—	0905	30.0	1704	6.0	—	—	—	—	—	—	—	
1/17/2015	OA-1	1690	1690	—	—	—	—	—	—	0906	28.5	1707	4.5	—	—	—	—	—	—	—	
1/17/2015	OA-2	24493	24493	—	—	—	—	—	—	0907	30+	1708	5.0	—	—	—	—	—	—	—	

Notes:

pump rate: 199.65 ml/min

* half way through sampling, water came into the sample train

** halfway through sampling, gauge on wall side reached 28 in-Hg

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Appendix **C**

Laboratory Analytical Reports

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1/29/2015
Mr. Wayne Hung
Arcadis U.S., Inc.
2550 N. First Street
Suite 200
San Jose CA 95131

Project Name: Aspike
Project #: EM009157.0017
Workorder #: 1501217

Dear Mr. Wayne Hung

The following report includes the data for the above referenced project for sample(s) received on 1/20/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-17 VI 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

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WORK ORDER #: 1501217

Work Order Summary

CLIENT:	Mr. Wayne Hung Arcadis U.S., Inc. 2550 N. First Street Suite 200 San Jose, CA 95131	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	650-469-7230	**P.O. #**	EM009155.0017
FAX:	650-469-7235	**PROJECT #**	EM009157.0017 Aspike
DATE RECEIVED:	01/20/2015	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	01/29/2015		

FRACTION #	NAME	TEST
01A	SVP-7	Modified TO-17 VI
02A	SVP-8	Modified TO-17 VI
03A	Field blank	Modified TO-17 VI
04A	Lab Blank	Modified TO-17 VI
05A	CCV	Modified TO-17 VI
06A	LCS	Modified TO-17 VI
06AA	LCSD	Modified TO-17 VI

CERTIFIED BY: Heidi Hayes DATE: 01/29/15

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

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

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

LABORATORY NARRATIVE
Modified EPA Method TO-17 (VI Tubes)
Arcadis U.S., Inc.
Workorder# 1501217

Three TO-17 VI Tube samples were received on January 20, 2015. The laboratory performed the analysis via modified EPA Method TO-17 using GC/MS in the full scan mode. TO-17 'VI' sorbent tubes are thermally desorbed onto a secondary trap. The trap is thermally desorbed to elute the components into the GC/MS system for compound separation and detection.

A modification that may be applied to EPA Method TO-17 at the client's discretion is the requirement to transport sorbent tubes at 4 deg C. Laboratory studies demonstrate a high level of stability for VOCs on the TO-17 'VI' tube at room temperature for periods of up to 14 days. Tubes can be shipped to and from the field site at ambient conditions as long as the 14-day sample hold time is upheld. Trip blanks and field surrogate spikes are used as additional control measures to monitor recovery and background contribution during tube transport.

Since the TO-17 VI application significantly extends the scope of target compounds addressed in EPA Method TO-15 and TO-17, the laboratory has implemented several method modifications outlined in the table below. Specific project requirements may over-ride the laboratory modifications.

Requirement	***TO-17***	***ATL Modifications***
Initial Calibration	%RSD</=30% with 2 allowed out up to 40%	VOC list: %RSD</=30% with 2 allowed out up to 40% SVOC list: %RSD</=30% with 2 allowed out up to 40%
Daily Calibration	%D for each target compound within +/-30%.	Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene within +/-40%D
Audit Accuracy	70-130%	Second source recovery limits for Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene = 60-140%.
Distributed Volume Pairs	Collection of distributed volume pairs required for monitoring ambient air to insure high quality.	If the client is sampling well characterized air or has verified performance through previous sampling or distributed pairs, single tube sampling may be appropriate. Distributed volume pairs may not be practical or useful for soil vapor collection due to
Analytical Precision	</=20% RPD	<30% RPD for Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A sampling volume of 0.0600 L was used to convert ng to ug/m3 for the associated Lab Blank and sample Field blank.

Definition of Data Qualifying Flags

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

B - Compound present in blank (subtraction not performed).

J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-17

Client Sample ID: SVP-7

Lab ID#: 1501217-01A

No Detections Were Found.

Client Sample ID: SVP-8

Lab ID#: 1501217-02A

No Detections Were Found.

Client Sample ID: Field blank

Lab ID#: 1501217-03A

No Detections Were Found.

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Client Sample ID: SVP-7

Lab ID#: 1501217-01A

EPA METHOD TO-17

File Name:	**18012608**	**Date of Extraction: NA**	**Date of Collection: 1/17/15 12:39:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 1/26/15 06:18 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	17	Not Detected	Not Detected

Air Sample Volume(L): 0.0600
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	116	50-150

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Client Sample ID: SVP-8

Lab ID#: 1501217-02A

EPA METHOD TO-17

File Name:	**18012609**	**Date of Extraction: NA**	**Date of Collection: 1/17/15 3:39:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 1/26/15 07:02 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	17	Not Detected	Not Detected

Air Sample Volume(L): 0.0600
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	88	50-150

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Client Sample ID: Field blank

Lab ID#: 1501217-03A

EPA METHOD TO-17

File Name:	**18012607**	**Date of Extraction: NA**	**Date of Collection: 1/17/15 5:50:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 1/26/15 05:37 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	17	Not Detected	Not Detected

Air Sample Volume(L): 0.0600
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	93	50-150

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Client Sample ID: Lab Blank

Lab ID#: 1501217-04A

EPA METHOD TO-17

File Name:	**18012606**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 1/26/15 02:48 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	17	Not Detected	Not Detected

Air Sample Volume(L): 0.0600

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Naphthalene-d8	77	50-150

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Client Sample ID: CCV
Lab ID#: 1501217-05A
EPA METHOD TO-17

File Name:	**18012603**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 1/26/15 12:43 PM**

Compound	%Recovery
Naphthalene	88

Air Sample Volume(L): 1.00
Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Naphthalene-d8	69	50-150

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Client Sample ID: LCS
Lab ID#: 1501217-06A
EPA METHOD TO-17

File Name:	**18012604**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 1/26/15 01:24 PM**

Compound	%Recovery	Method Limits
Naphthalene	92	70-130

Air Sample Volume(L): 1.00
Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Naphthalene-d8	70	50-150

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Client Sample ID: LCSD
Lab ID#: 1501217-06AA
EPA METHOD TO-17

File Name:	**18012605**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 1/26/15 02:06 PM**

Compound	%Recovery	Method Limits
Naphthalene	88	70-130

Air Sample Volume(L): 1.00
Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Naphthalene-d8	66	50-150

TO-17 SAMPLE COLLECTION

@Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

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
(916) 985-1000 FAX (916) 985-1020

Project Manager: Erica Kalve
Collected by: (Print and Sign) Wayne Hung
Company: ARCADIS Email: erica.kalve@arcadis-us.com
Address: 100 Smith Ranch Rd #329 City: San Rafael State: CA Zip: 94903
Phone: 415-491-4550 Fax: —

Project Info:
P.O. #: —
Project #: EM009137.0017
Project Name: Aspike

Turn Around Time:
☒ Normal
☐ Rush
specify

Reporting Units:
☐ ppmv
☐ ppbv
☐ µg/m3
☐ mg/m3

Lab I.D.	Field Sample I.D. (Location)	Engraved or Stamped Tube #	Date of Collection (mm/dd/yy)	Start Time (hr:min)	End Time (hr:min)	Pre-Test Flow Rate	Post-Test Flow Rate	Volume (mL)	Indoor/Outdoor % RH	Indoor/Outdoor Temp	Indoor Air	Outdoor Air	Soil Vapor	Other ( )
C1A	(TO-17) ~~SVP-6~~ ~~SVP-8~~ SVP-7	G0140114	1/17/15	1239	1239	—	—	60			☐	☐	☒	☐
C2A	(TO-17) ~~SVP-7~~ SVP-8	G0147258	1/17/15	1539	1539	—	—	60			☐	☐	☒	☐
03A	field blank	G0145598	1/17/15	1750	1750	—	—	—			☐	☐	☐	☐
											☐	☐	☐	☐
											☐	☐	☐	☐
											☐	☐	☐	☐
											☐	☐	☐	☐
											☐	☐	☐	☐
											☐	☐	☐	☐
											☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	1/20/15 1215		1-20-15 12:15
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 #
UPS-Ron		2.4°C	Good	Yes No (None)	1501217

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1/30/2015
Mr. Wayne Hung
Arcadis U.S., Inc.
2550 N. First Street
Suite 200
San Jose CA 95131

Project Name: Aspire
Project #: EM009157.0017
Workorder #: 1501234A

Dear Mr. Wayne Hung

The following report includes the data for the above referenced project for sample(s) received on 1/20/2015 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 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

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WORK ORDER #: 1501234A

Work Order Summary

CLIENT:	Mr. Wayne Hung Arcadis U.S., Inc. 2550 N. First Street Suite 200 San Jose, CA 95131	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	650-469-7230	**P.O. #**	EM009155.0017
FAX:	650-469-7235	**PROJECT #**	EM009157.0017 Aspire
DATE RECEIVED:	01/20/2015	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	01/30/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	Crawl Space-1	Modified TO-15	3.5 "Hg	4.8 psi
01B	Crawl Space-1	Modified TO-15	3.5 "Hg	4.8 psi
02A	Crawl Space-2	Modified TO-15	4.9 "Hg	5 psi
02B	Crawl Space-2	Modified TO-15	4.9 "Hg	5 psi
03A	OA-1	Modified TO-15	2.8 "Hg	5 psi
03B	OA-1	Modified TO-15	2.8 "Hg	5 psi
04A	OA-2	Modified TO-15	3.7 "Hg	4.9 psi
04B	OA-2	Modified TO-15	3.7 "Hg	4.9 psi
05A	Lab Blank	Modified TO-15	NA	NA
05B	Lab Blank	Modified TO-15	NA	NA
06A	CCV	Modified TO-15	NA	NA
06B	CCV	Modified TO-15	NA	NA
07A	LCS	Modified TO-15	NA	NA
07AA	LCSD	Modified TO-15	NA	NA
07B	LCS	Modified TO-15	NA	NA
07BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 01/30/15

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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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
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LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Arcadis U.S., Inc.
Workorder# 1501234A

Four 6 Liter Summa Canister (SIM Certified) samples were received on January 20, 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 liters 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 taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four 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
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

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.

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.

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

N - The identification is based on presumptive evidence.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: Crawl Space-1

Lab ID#: 1501234A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	15	46	61	190

Client Sample ID: Crawl Space-1

Lab ID#: 1501234A-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.075	0.23	0.24	0.73
Toluene	0.030	1.4	0.11	5.3
Ethyl Benzene	0.030	0.20	0.13	0.89
m,p-Xylene	0.060	1.0	0.26	4.3
o-Xylene	0.030	0.21	0.13	0.92

Client Sample ID: Crawl Space-2

Lab ID#: 1501234A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	16	57	65	230

Client Sample ID: Crawl Space-2

Lab ID#: 1501234A-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.080	0.22	0.26	0.70
Toluene	0.032	1.5	0.12	5.6
Ethyl Benzene	0.032	0.23	0.14	1.0
m,p-Xylene	0.064	1.1	0.28	4.7
o-Xylene	0.032	0.26	0.14	1.1

Client Sample ID: OA-1

Lab ID#: 1501234A-03A

No Detections Were Found.

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

Client Sample ID: OA-1

Lab ID#: 1501234A-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.074	0.17	0.24	0.55
Toluene	0.030	0.43	0.11	1.6
Ethyl Benzene	0.030	0.074	0.13	0.32
m,p-Xylene	0.059	0.23	0.26	1.0
o-Xylene	0.030	0.082	0.13	0.36

Client Sample ID: OA-2

Lab ID#: 1501234A-04A

No Detections Were Found.

Client Sample ID: OA-2

Lab ID#: 1501234A-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.076	0.16	0.24	0.51
Toluene	0.030	0.32	0.11	1.2
Ethyl Benzene	0.030	0.054	0.13	0.23
m,p-Xylene	0.061	0.17	0.26	0.73
o-Xylene	0.030	0.064	0.13	0.28

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Client Sample ID: Crawl Space-1

Lab ID#: 1501234A-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012211**	**Date of Collection: 1/17/15 5:00:00 PM**	
Dil. Factor:	**1.50**	**Date of Analysis: 1/22/15 05:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.75	Not Detected	3.9	Not Detected
TPH ref. to Gasoline (MW=100)	15	46	61	190

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: Crawl Space-1

Lab ID#: 1501234A-01B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012211sim**	**Date of Collection: 1/17/15 5:00:00 PM**	
Dil. Factor:	**1.50**	**Date of Analysis: 1/22/15 05:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.15	Not Detected	0.54	Not Detected
Benzene	0.075	0.23	0.24	0.73
Toluene	0.030	1.4	0.11	5.3
Ethyl Benzene	0.030	0.20	0.13	0.89
m,p-Xylene	0.060	1.0	0.26	4.3
o-Xylene	0.030	0.21	0.13	0.92

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: Crawl Space-2

Lab ID#: 1501234A-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012212**	**Date of Collection: 1/17/15 5:04:00 PM**	
Dil. Factor:	**1.60**	**Date of Analysis: 1/22/15 06:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.80	Not Detected	4.2	Not Detected
TPH ref. to Gasoline (MW=100)	16	57	65	230

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: Crawl Space-2

Lab ID#: 1501234A-02B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012212sim**	**Date of Collection: 1/17/15 5:04:00 PM**	
Dil. Factor:	**1.60**	**Date of Analysis: 1/22/15 06:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected
Benzene	0.080	0.22	0.26	0.70
Toluene	0.032	1.5	0.12	5.6
Ethyl Benzene	0.032	0.23	0.14	1.0
m,p-Xylene	0.064	1.1	0.28	4.7
o-Xylene	0.032	0.26	0.14	1.1

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: OA-1

Lab ID#: 1501234A-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012213**	**Date of Collection: 1/17/15 5:07:00 PM**	
Dil. Factor:	**1.48**	**Date of Analysis: 1/22/15 07:05 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.74	Not Detected	3.9	Not Detected
TPH ref. to Gasoline (MW=100)	15	Not Detected	60	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: OA-1

Lab ID#: 1501234A-03B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012213sim**	**Date of Collection: 1/17/15 5:07:00 PM**	
Dil. Factor:	**1.48**	**Date of Analysis: 1/22/15 07:05 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.15	Not Detected	0.53	Not Detected
Benzene	0.074	0.17	0.24	0.55
Toluene	0.030	0.43	0.11	1.6
Ethyl Benzene	0.030	0.074	0.13	0.32
m,p-Xylene	0.059	0.23	0.26	1.0
o-Xylene	0.030	0.082	0.13	0.36

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: OA-2

Lab ID#: 1501234A-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012214**	**Date of Collection: 1/17/15 5:08:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 1/22/15 08:01 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.76	Not Detected	4.0	Not Detected
TPH ref. to Gasoline (MW=100)	15	Not Detected	62	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: OA-2

Lab ID#: 1501234A-04B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012214sim**	**Date of Collection: 1/17/15 5:08:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 1/22/15 08:01 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.15	Not Detected	0.55	Not Detected
Benzene	0.076	0.16	0.24	0.51
Toluene	0.030	0.32	0.11	1.2
Ethyl Benzene	0.030	0.054	0.13	0.23
m,p-Xylene	0.061	0.17	0.26	0.73
o-Xylene	0.030	0.064	0.13	0.28

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	114	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1501234A-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012210**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 02:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.50	Not Detected	2.6	Not Detected
TPH ref. to Gasoline (MW=100)	10	Not Detected	41	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1501234A-05B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012210sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 02:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: CCV

Lab ID#: 1501234A-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 07:41 AM**	

Compound	%Recovery
Naphthalene	102
TPH ref. to Gasoline (MW=100)	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: CCV

Lab ID#: 1501234A-06B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012202sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 07:41 AM**	

Compound	%Recovery
Methyl tert-butyl ether	75
Benzene	71
Toluene	82
Ethyl Benzene	87
m,p-Xylene	85
o-Xylene	87

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	116	70-130

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Client Sample ID: LCS

Lab ID#: 1501234A-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 08:32 AM**	

Compound	%Recovery	Method Limits
Naphthalene	82	60-140
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: LCSD

Lab ID#: 1501234A-07AA

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 09:12 AM**	

Compound	%Recovery	Method Limits
Naphthalene	74	60-140
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: LCS

Lab ID#: 1501234A-07B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012203sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 08:32 AM**	

Compound	%Recovery	Method Limits
Methyl tert-butyl ether	80	70-130
Benzene	78	70-130
Toluene	88	70-130
Ethyl Benzene	91	70-130
m,p-Xylene	91	70-130
o-Xylene	91	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	115	70-130

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Client Sample ID: LCSD

Lab ID#: 1501234A-07BB

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v012204sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/22/15 09:12 AM**	

Compound	%Recovery	Method Limits
Methyl tert-butyl ether	80	70-130
Benzene	77	70-130
Toluene	88	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	92	70-130
o-Xylene	92	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	116	70-130

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Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

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

Project Manager Erica Kalve
Collected by: (Print and Sign) Wayne Hung
Company ARCADIS Email erica.kalve@arcadis-us.com
Address 100 Smith Ranch Rd #529 City San Rafael State CA Zip 94903
Phone 415-491-4530 Fax

Project Info:
P.O. # —
Project # EM009157.0017
Project Name Aspire

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	Crawl Space-1	35179	1/17/15	1700	TO-15 (SIM)*	30+	5.5		
02A	Crawl Space-2	9557	1/17/15	1704	↓	30.0	6.0		
03A	OA-1	1690	1/17/15	1707		28.5	4.5		
04A	OA-2	24693	1/17/15	1708		30+	5.0		
	SVP-6	5669	1/17/15	1234	TO-15* / ASTM 1946-He (CH_4, CO_2, O_2)	28.5	5.0		
	SVP-7	1651	1/17/15	1537	TO-15* / ASTM 1946-He (CH_4, CO_2, O_2)	29.0	5.0		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	@1215 1/20/15		12:15 1-20-15
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
* TPH(GS), Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene, MTBE, Naphthalene

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	HD-Ron		NA	Good	Yes No (None)	1501234

Form 1293 rev.11

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1/30/2015
Mr. Wayne Hung
Arcadis U.S., Inc.
2550 N. First Street
Suite 200
San Jose CA 95131

Project Name: Aspire
Project #: EM009157.0017
Workorder #: 1501234B

Dear Mr. Wayne Hung

The following report includes the data for the above referenced project for sample(s) received on 1/20/2015 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

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WORK ORDER #: 1501234B

Work Order Summary

CLIENT:	Mr. Wayne Hung Arcadis U.S., Inc. 2550 N. First Street Suite 200 San Jose, CA 95131	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	650-469-7230	**P.O. #**	EM009155.0017
FAX:	650-469-7235	**PROJECT #**	EM009157.0017 Aspire
DATE RECEIVED:	01/20/2015	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	01/30/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
05A	SVP-6	TO-15	3.7 "Hg	4.9 psi
06A	SVP-7	TO-15	5.9 "Hg	5 psi
07A	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 01/30/15

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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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 1501234B

Two 6 Liter Summa Canister (SIM Certified) samples were received on January 20, 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.

Receiving Notes

The Chain of Custody (COC) information for samples SVP-6 and SVP-7 did not match the entries on the sample tags with regard to sample identification. Therefore the information on the COC was used to process and report the samples.

The Chain of Custody (COC) information for sample SVP-6 did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

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.

The hydrocarbon profile present in sample SVP-6 did not resemble that of commercial gasoline. Results were calculated using the response factor derived from the gasoline calibration.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SVP-6

Lab ID#: 1501234B-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH ref. to Gasoline (MW=100)	76	200	310	830

Client Sample ID: SVP-7

Lab ID#: 1501234B-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.84	1.1	2.7	3.6
Toluene	0.84	2.0	3.1	7.4
m,p-Xylene	0.84	2.0	3.6	8.7
o-Xylene	0.84	0.86	3.6	3.7
Methyl tert-butyl ether	0.84	3.7	3.0	13
TPH ref. to Gasoline (MW=100)	84	760	340	3100

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Client Sample ID: SVP-6

Lab ID#: 1501234B-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a012311**	**Date of Collection: 1/17/15 12:34:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 1/23/15 03:18 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.76	Not Detected	2.4	Not Detected
Ethyl Benzene	0.76	Not Detected	3.3	Not Detected
Toluene	0.76	Not Detected	2.9	Not Detected
m,p-Xylene	0.76	Not Detected	3.3	Not Detected
o-Xylene	0.76	Not Detected	3.3	Not Detected
Methyl tert-butyl ether	0.76	Not Detected	2.7	Not Detected
Naphthalene	3.0	Not Detected	16	Not Detected
TPH ref. to Gasoline (MW=100)	76	200	310	830

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SVP-7

Lab ID#: 1501234B-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a012312**	**Date of Collection: 1/17/15 3:37:00 PM**	
Dil. Factor:	**1.67**	**Date of Analysis: 1/23/15 03:52 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.84	1.1	2.7	3.6
Ethyl Benzene	0.84	Not Detected	3.6	Not Detected
Toluene	0.84	2.0	3.1	7.4
m,p-Xylene	0.84	2.0	3.6	8.7
o-Xylene	0.84	0.86	3.6	3.7
Methyl tert-butyl ether	0.84	3.7	3.0	13
Naphthalene	3.3	Not Detected	18	Not Detected
TPH ref. to Gasoline (MW=100)	84	760	340	3100

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1501234B-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a012306**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/23/15 12:06 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected
TPH ref. to Gasoline (MW=100)	50	Not Detected	200	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: CCV

Lab ID#: 1501234B-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a012302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/23/15 09:31 AM**	

Compound	%Recovery
Benzene	96
Ethyl Benzene	99
Toluene	95
m,p-Xylene	99
o-Xylene	99
Methyl tert-butyl ether	103
Naphthalene	102
TPH ref. to Gasoline (MW=100)	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 1501234B-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a012303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/23/15 10:06 AM**	

Compound	%Recovery	Method Limits
Benzene	96	70-130
Ethyl Benzene	101	70-130
Toluene	96	70-130
m,p-Xylene	100	70-130
o-Xylene	104	70-130
Methyl tert-butyl ether	101	70-130
Naphthalene	64	60-140
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 1501234B-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a012304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/23/15 10:41 AM**	

Compound	%Recovery	Method Limits
Benzene	96	70-130
Ethyl Benzene	99	70-130
Toluene	96	70-130
m,p-Xylene	99	70-130
o-Xylene	103	70-130
Methyl tert-butyl ether	102	70-130
Naphthalene	67	60-140
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

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

Project Manager: Erica Kalve
Collected by: (Print and Sign) Wayne Hang
Company: AECOM'S Email: erica.kalve@aecom.com
Address: 710 Smith Ranch Rd #319 City: San Rafael State: CA Zip: 94903
Phone: 415-491-4450 Fax:

Project Info:
P.O. #:
Project #: EM009167.0017
Project Name: Aspire

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)
	Crawl Space-1	35179	1/19/15	1100	TO-15 (SIM)*	30+	5.5		
	Crawl Space-2	9557	1/19/15	1104		30.0	6.0		
	OA-1	1690	1/19/15	1109		28.5	4.5		
	OA-2	24493	1/19/15	1108	↓	30+	5.0		
05A	SVP-6	5669	1/19/15	1234	TO-15*/ ASTM 1946-He (CH4, CO2, O2)	28.5	5.0		
06A	SVP-7	1651	1/19/15	1539	TO-15*/ ASTM 1946-He (CH4, CO2, O2)	29.0	5.0		

Relinquished by: (signature) Date/Time: @12:15 1/20/15
Received by: (signature) Date/Time: 12:15 1-20-15

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

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

Notes:
* TPH(gas), Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene, MTBE, Naphthalene

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
HD-Kon		NA	Good	Yes No None	1501234

Form 1293 rev.11

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2/2/2015
Mr. Wayne Hung
Arcadis U.S., Inc.
2550 N. First Street
Suite 200
San Jose CA 95131

Project Name: Aspire
Project #: EM009157.0017
Workorder #: 1501234C

Dear Mr. Wayne Hung

The following report includes the data for the above referenced project for sample(s) received on 1/20/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

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WORK ORDER #: 1501234C

Work Order Summary

CLIENT:	Mr. Wayne Hung Arcadis U.S., Inc. 2550 N. First Street Suite 200 San Jose, CA 95131	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	650-469-7230	**P.O. #**	EM009155.0017
FAX:	650-469-7235	**PROJECT #**	EM009157.0017 Aspire
DATE RECEIVED:	01/20/2015	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	02/02/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
05A	SVP-6	Modified ASTM D-1946	3.7 "Hg	4.9 psi
06A	SVP-7	Modified ASTM D-1946	5.9 "Hg	5 psi
07A	Lab Blank	Modified ASTM D-1946	NA	NA
07B	Lab Blank	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/02/15

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
Modified ASTM D-1946
Arcadis U.S., Inc.
Workorder# 1501234C

Two 6 Liter Summa Canister (SIM Certified) samples were received on January 20, 2015. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

The Chain of Custody (COC) information for samples SVP-6 and SVP-7 did not match the entries on the sample tags with regard to sample identification. Therefore the information on the COC was used

to process and report the samples.

The Chain of Custody (COC) information for sample SVP-6 did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
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 detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: SVP-6

Lab ID#: 1501234C-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.15	2.2
Methane	0.00015	0.53
Carbon Dioxide	0.015	2.8

Client Sample ID: SVP-7

Lab ID#: 1501234C-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.17	17
Methane	0.00017	0.024
Carbon Dioxide	0.017	0.61

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Client Sample ID: SVP-6

Lab ID#: 1501234C-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9012913**	**Date of Collection: 1/17/15 12:34:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 1/29/15 04:01 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.15	2.2
Methane	0.00015	0.53
Carbon Dioxide	0.015	2.8
Helium	0.076	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

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Client Sample ID: SVP-7

Lab ID#: 1501234C-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9012914**	**Date of Collection: 1/17/15 3:37:00 PM**	
Dil. Factor:	**1.67**	**Date of Analysis: 1/29/15 04:23 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.17	17
Methane	0.00017	0.024
Carbon Dioxide	0.017	0.61
Helium	0.084	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

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Client Sample ID: Lab Blank

Lab ID#: 1501234C-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9012904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/29/15 08:44 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1501234C-07B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9012903b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/29/15 08:13 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1501234C-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9012902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/29/15 06:53 AM**	

Compound	%Recovery	Method Limits
Oxygen	90	85-115
Methane	88	85-115
Carbon Dioxide	93	85-115
Helium	93	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1501234C-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9012922**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/29/15 08:36 PM**	

Compound	%Recovery	Method Limits
Oxygen	90	85-115
Methane	89	85-115
Carbon Dioxide	93	85-115
Helium	92	85-115

Container Type: NA - Not Applicable