May 10, 2016

Dilan Roe
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6540

Subject: Vapor and Air Monitoring Report for Building 300 for the Former Pacific Electric Motors Site 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411)

Dear Ms. Roe:

Enclosed is the Vapor and Air Monitoring Report for Building 300 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 the building in accordance with a seasonal sampling schedule and provide additional confirmation of the effectiveness of the Vapor Intrusion Mitigation system.

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) 434-5507.

Sincerely,

Carolyn Choy
Aspire Public Schools

Enclosure

College for Certain, LLC

VAPOR AND AIR MONITORING REPORT FOR BUILDING 300

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

May 10, 2016

,

VAPOR AND AIR MONITORING REPORT FOR BUILDING 300

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

Prepared for:

Aspire Public Schools

1001 22nd Avenue, Suite 100

Oakland, California 94606

Erica Kalve, P.G.

Principal Geologist

Angeline Tan

Staff Environmental Engineer

Prepared by:

Arcadis U.S., Inc.

100 Smith Ranch Road

Suite 329

San Rafael

California 94903

Tel 415 491 4530

Fax 415 491 4532

Our Ref.:

EM009155.0017

Date:

May 10, 2016

CONTENTS

TABLE

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
ACEH	Alameda County Department of Environmental Health
ACT	Advanced Construction Technologies
Arcadis	Arcadis U.S., Inc.
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
CFC	College for Certain, LLC
COPC	constituent of potential concern
DTSC	Department of Toxic Substances Control
HHRA	Human Health Risk Assessment
HVAC	heating, ventilation, and air conditioning
MTBE	methyl tertiary-butyl ether
PCBs	polychlorinated biphenyls
PEM	former Pacific Electric Motors
RSL	Regional Screening Level
Site	former Pacific Electric Motors (PEM) facility located at 1009 66th Avenue in Oakland, California
SVE/AS	soil-vapor extraction/air sparging
TBA	tertiary-butyl alcohol
TPHg	total petroleum hydrocarbons as gasoline
TSCA	Toxic Substance Control Act
USEPA	United States Environmental Protection Agency
VIM	Vapor Intrusion Mitigation
VOC	volatile organic compound

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.

Erica Kalve, P.G. (8425)
Principal Geologist

Expires Sept. 30, 2017

May 10, 2016
Date

*A professional geologist's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or a guarantee, expressed or implied, not does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.

1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) has prepared this Vapor and Air Monitoring Report for Building 300 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). Alameda County Department of Environmental Health (ACEH) provided conditional approval of the Vapor Intrusion Mitigation (VIM) system design for the proposed gymnasium building (Arcadis 2014c) in a letter dated January 8, 2015 (ACEH 2015). As stated in the conditional approval letter, a determination on the adequacy of the VIM system to mitigate potential vapor intrusion will be based upon vapor and indoor air monitoring data collected after installation of the system. A Baseline Vapor and Air Monitoring Report for Building 300 was submitted on November 9, 2015 and an additional sampling event was recommended to be conducted in approximately 6 months to evaluate the building in accordance with a seasonal sampling schedule and provide additional confirmation of the effectiveness of the VIM system.

This report presents the results and evaluation of the vapor in pipe risers and indoor air samples collected on April 8, 2016 in the gymnasium building (also referred to as Building 300). The vapor and indoor air samples were collected in accordance with the Building 300 Vapor and Indoor Air Monitoring Plan (Air Monitoring Plan; Arcadis 2015a) and follow applicable guidance per the Department of Toxic Substances Control (DTSC) Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (the DTSC Vapor Intrusion Guidance Document; DTSC 2011) to confirm the effectiveness of the VIM system in Building 300.

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 PEM facility. PEM occupied the Site from 1948 to 2001. Activities that PEM conducted at the Site included manufacturing specialty magnets, power supplies, and components, and repairing motors, generators, transformers, and magnets. PEM reportedly installed a 2,000-gallon gasoline underground storage tank (UST) at the Site 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, four laboratories, three girls' and three boys' restrooms, and four staff restrooms)
- An asphalt-paved parking area with access via two driveways on 66th Avenue (one for ingress and one for egress)
- An 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 was constructed in 2015 and a VIM system was installed on April 7 and 8, 2015 by Advanced Construction Technologies (ACT).

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 human health risk with assumed exposures to the chemicals of potential concerns (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 its letter to Aspire Charter Schools dated August 13, 2009 (ACEH 2009).

Several remedial actions implemented in accordance with the Revised CAP included:

- 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 2014a).
- Air injection and soil-vapor extraction (SVE) to reduce concentrations of TPHg, benzene, toluene, ethylbenzene, and xylenes (BTEX compounds), tertiary-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 PCB-containing soil (and building materials) were remediated in accordance with the Revised CAP and Self-Implementing Cleanup Plan (Arcadis 2009a, 2009b).

The implementation of the Revised CAP was reported to ACEH (and the United States Environmental Protection Agency [USEPA]) in the 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 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" and a passive system to further reduce the potential for soil vapors to intrude to the existing on-site buildings. The newly constructed gymnasium (Building 300) has a VIM system installed on April 7 and 8, 2015 by ACT to mitigate the potential for soil vapors to intrude to the building.

3 FIELD SAMPLING

To evaluate the effectiveness of the VIM system, three grab vapor samples (R-1, R-2, and R-3) and six indoor air samples (IA-01 through IA-06) were collected. Samples were collected on April 8, 2016 in accordance with the Indoor Air Monitoring Plan. Following sample collection, the vapor vent riser grab samples and the indoor air samples were shipped by FedEx under appropriate chain-of-custody protocols to Eurofins Air Toxics Inc., in Folsom, California, for laboratory analysis of TPHg, BTEX, MTBE, and naphthalene by Modified USEPA Method TO-15 (SIM).

3.1 Grab Riser Pipe Vapor Sample Collection

One vapor sample was collected from each riser pipe (grab riser pipe vapor samples R-1, R-2, and R-3). Prior to sampling, two vacuum readings were taken and recorded: one reading with the ball valve open and one with the ball valve closed. After the ball valve was closed, a high-volume gas pump was used to purge approximately one volume of air from the vapor vent riser, as calculated based on the pipe diameter and length of pipe measured from the ground surface (where it connects to the GeoVent) to the ball valve at roof level.

Air samples were collected in 6-liter stainless steel certified clean Summa canisters. Each 6-liter Summa canister was equipped with a flow controller and flow restrictor that use a critical orifice to regulate the flow of air into the canister. The flow controllers were checked by the laboratory to verify that air flow for each canister is set at the appropriate rate for the collection of the grab samples. The canisters were pre-evacuated by the laboratory to approximately -30 inches of mercury (Hg). Grab samples were collected over an approximately 20- to 30-minute period from the effluent sampling ports (Appendix A).

3.2 Indoor Air Sampling

Six eight-hour integrated air samples (IA-01 through IA-06; Figure 3) were collected while the heating, ventilation, and air conditioning (HVAC) system was turned off. Note that the HVAC system had been turned off for at least one week during the spring break and the building had been closed. The indoor air samples were collected in accordance with the Air Monitoring Plan (Arcadis 2015a). One outdoor ambient air samples (OA-4; Figure 3) was collected within one hour of the start of the indoor air sampling. The location of OA-4 is shown on Figure 3.

4 ANALYTICAL RESULTS

Indoor air samples (IA-01 through IA-06), grab riser pipe samples (R1, R2, and R3), and one outdoor air samples (OA-4) were collected on April 8, 2016. The analytical results are compared with the baseline results and presented in Table 1, and detected concentrations are discussed in detail below. Laboratory analytical reports are included in Appendix B.

4.1 Grab Riser Pipe Vapor Sample Results

The grab riser pipe vapor samples were collected to evaluate concentrations of VOCs present in the vapors collected and mitigated by the VIM system. Benzene, toluene, ethylbenzene, m,p-xylene, o-xylene, MTBE, TPHg, and naphthalene were detected in the collected vapor samples, as follows:

- Benzene was detected at concentrations ranging from 0.29 micrograms per cubic meter (µg/m^3) in the sample collected from riser pipe R-3 to 1.0 µg/m^3 in riser pipe R-1.
- Toluene was detected at concentrations ranging from 1.5 µg/m^3 in the sample collected from riser pipe R-2 to 12 µg/m^3 in riser pipe R-1.
- Ethylbenzene was detected at concentrations ranging from 0.27 µg/m^3 in the sample collected from riser pipe R-2 to 2.5 µg/m^3 in riser pipe R-1.
- M,p-xylene was detected at concentrations ranging from 1.0 µg/m^3 in the sample collected from riser pipe R-2 to 11 µg/m^3 in riser pipe R-1.
- O-xylene was detected at concentrations ranging from 0.43 µg/m^3 in the sample collected from riser pipe R-2 to 4.4 µg/m^3 in riser pipe R-1.
- MTBE was detected at concentrations ranging from an estimated 0.0084 µg/m^3 in the sample collected from riser pipe R-2 to 2.8 µg/m^3 in riser pipe R-1.
- TPHg was detected in the samples collected from R-1 and R-3 with concentrations of 820 µg/m^3 and 61 µg/m^3, respectively.

- Naphthalene was detected at concentrations ranging from an estimated 0.45 µg/m^3 in the sample collected from riser pipe R-2 to 0.68 µg/m^3 in riser pipe R-1.

4.2 Indoor Air Analytical Results

The indoor air samples were collected to evaluate concentrations of VOCs present in indoor air following installation of the VIM system. Results are compared using a tiered approach as described in the Indoor Air Monitoring Plan. Specifically, USEPA Regional Screening Levels (RSLs) (USEPA 2015) for residential air quality criteria with exceptions for specific compounds as noted by Human Health Risk Assessment (HHRA) Note Number 3 (DTSC 2016) were used to evaluate health-based screening criteria. Sample results were also compared to outdoor air concentrations to evaluate whether indoor air quality may be affected by ambient sources. Human health-based screening criteria, indoor air, and outdoor air results are presented in Table 1. As summarized, benzene, toluene, ethylbenzene, m,p-xylene, o-xylene, MTBE, and naphthalene were detected in the collected indoor air samples. However, with the exception of benzene and naphthalene, the other detected COPCs were below their respective health risk-based soil vapor thresholds (Table 1).

As shown in Table 1, the residential RSL for benzene and naphthalene are 0.097 µg/m^3 and 0.083 µg/m^3, respectively. The benzene and naphthalene analytical reporting limits for non-detect results were above the screening level. The samples were reported as both detected and not detected above analytical reporting limits. Vapor intrusion potential was evaluated by comparing indoor air results to outdoor air results and to published indoor air benzene values, as follows:

- The laboratory reported concentrations observed in indoor air and outdoor air are very similar for benzene; benzene concentration in outdoor air was 0.38 µg/m^3 compared with the benzene concentrations in indoor air which ranged from 0.43 µg/m^3 to 0.54 µg/m^3.
- According to the USEPA, indoor air typically has detectable concentrations of benzene up to 5 µg/m^3 due to ambient benzene levels accumulating indoors (USEPA 2011).
- Additionally, 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 µg/m^3 and 2009 at 0.531 µg/m^3 (Bay Area Air Quality Management District [BAAQMD] 2009).

The benzene concentrations detected in indoor air are similar to the outdoor air results, and the results are within the expected background concentrations published by the USEPA and BAAQMD. As such, these observations of benzene in indoor air are likely attributable to ambient contributions.

Note that TPHg was not detected in any indoor air or outdoor air samples above the reporting limit while TPHg was detected in the grab riser pipe vapor samples. In addition, since the building was newly built (less than 6 months), building materials like paint, and flooring could still be off-gassing. These could also be a likely contributor to the detection of other VOCs such as toluene, ethylbenzene, and xylenes measured (at concentrations below the respective health-based levels) in the indoor samples collected

during the baseline sample event. The indoor air and outdoor air sample results indicate that ambient air quality likely impacts indoor air quality at the Site. As such, further optimization of the VIM system does not appear necessary and would not provide a significant improvement to indoor air quality in Building 300.

5 CONCLUSIONS AND RECOMMENDATIONS

Indoor air concentrations were screened against human health-based screening criteria developed for the protection of the resident using the methodology recommended by DTSC Human and Ecological Risk Office (HERO) (DTSC 2016).

Although there are low levels of benzene present in the indoor air samples, the reported results are similar to the reported results for the outdoor air samples, which represent the ambient levels of benzene in outdoor air at the time of sampling. These similar results for detected concentrations of benzene for indoor air and outdoor air samples, coupled with the observations made in outdoor air in the Bay Area in general, indicate that the concentrations detected in the indoor air samples are likely ambient and not due to vapor intrusion.

Low levels of toluene, ethyl benzene, m,p-xylene, o-xylene, and naphthalene are also detected in the riser pipe and indoor air samples. The detections in indoor air are below respective screening levels with the exception of naphthalene. Conversely, TPHg and MTBE are detected in the riser pipe samples but not in indoor air. Considering that the building attenuation factor for vapor intrusion of VOCs to indoor air should generally be similar for all VOCs, the detections of toluene, ethyl benzene, m,p-xylene, o-xylene, and naphthalene are likely present due to potential indoor VOC sources such as new building material that is off-gassing and not considered a vapor intrusion concern.

Because the ambient benzene and potential indoor VOC sources are likely the majority contributors to the indoor analytical results, additional active sub-slab depressurization is not needed. Based on these results, it appears that the VIM system is effectively mitigating the potential for vapor intrusion for Building 300. Additionally, with consideration of the vapor intrusion evaluation presented in the Second Vapor Intrusion Report for Building 200 submitted on February 19, 2016, the requirement to evaluate potential vapor intrusion concerns related to residual volatile organic compounds (VOCs) in soil, soil gas, and groundwater at the Site has been satisfied. As such, Arcadis recommends that this Site be considered for low-threat closure, as described in the Groundwater Monitoring Report dated February 28, 2014.

In support of the cap maintenance plan (which includes maintenance of the VIMs), Arcadis intends to submit a long-term monitoring plan for continued verification of the effectiveness of the VIM system. The plan is to include an additional year of indoor air sampling to be conducted in 2016-2017, followed by on-going indoor air monitoring every five-years thereafter.

6 REFERENCES

Alameda County Department of Environmental Health (ACEH). 2009. Revised CAP approval letter to Aspire Charter Schools. August 13.

———. 2015. Review of Vapor Mitigation System Design for Proposed Gymnasium Building and Cap Modification Plan and Plan Addendum for Fuel Leak Case No. RO0000411 and GeoTracker Global ID T0600101950, Pacific Electric Motors, 1009 66th Avenue, Oakland, CA 94621. January 8.

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.

———. 2009b. Toxic Substance Control Act Self-Implementing Cleanup Notification and Certification Former Pacific Electric Motors Facility 1009 66th Avenue in Oakland, California. October 23.

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

———. 2010b. Soil Removal Action Completion Report. September 15.

———. 2014a. Groundwater Monitoring Report, Former Pacific Electric Motors Site, 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411). February 28.

———. 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.

———.2015a. Building 300 Vapor and Indoor Air Monitoring Plan, Former Pacific Motors Site, 1009 66th Avenue, Oakland, California. March 20.

———.2015a. Vapor Intrusion Evaluation Report for Building 200, Former Pacific Motors Site, 1009 66th Avenue, Oakland, California. June 1.

Bay Area Air Quality Management District (BAAQMD). 2009. Summary and Analysis of West Berkeley Air Monitoring Results. April 14.

California Department of Toxic Substances Control (DTSC). 2009. Vapor Intrusion Mitigation Advisory. April. Section 6.3.4 revised May 8.

———. 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

———. 2016. Office of Human and Ecological Risk (HERO), Human Health Risk Assessment (HHRA) Note, HERO HHRA Note Number: 3. January.

United States Environmental Protection Agency (USEPA). 2011. Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990–2005): A Compilation of Statistics for Assessing Vapor Intrusion Office of Solid Waste and Emergency Response. June.

———. 2015. Regional Screening Levels. Available at: http://www.epa.gov/region9/superfund/prg/. November.

TABLE

Table 1
Outdoor Air, Indoor Air, and Riser Pipe 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
Indoor Air and Outdoor Air Sample Results									
USEPA Residential RSL for Indoor Air/DTSC Note 3		0.097	310	1.1	100	100	11	630*	0.083
IA-01	9/14/2015	**0.27**	3.4	0.45	1.8	0.74	<0.0070	130	**0.55 J**
	4/8/2016	**0.53**	2.4	0.79	1.6	0.60	<0.0032	<69	**0.13 J**
IA-02	9/14/2015	**0.28**	3.9	0.52	2.1	1.0	<0.0074	130	**0.24 J**
	4/8/2016	**0.54**	3.0	0.51	1.6	0.60	<0.0029	<64	**0.12 J**
IA-03	9/14/2015	**0.26 J**	4.4	0.52	2.2	0.95	<0.0072	130	**0.51 J**
	4/8/2016	**0.47**	2.1	0.42	1.3	0.53	<0.0030	<65	**0.12 J**
IA-04	9/14/2015	<0.27	3.9	0.49	1.9	0.87	<0.0073	120	**0.23 J**
	4/8/2016	**0.43**	1.6	0.32	0.96	0.43	<0.0031	<68	<0.097
IA-05	9/14/2015	<0.28	2.4	0.50	2.1	0.77	<0.0076	94	<0.11
	4/8/2016	**0.49**	2.3	0.46	1.4	0.55	<0.0032	<70	**0.17 J**
IA-06	9/14/2015	**0.28**	3.6	0.54	2.2	0.86	<0.0071	130	**0.33 J**
	4/8/2016	**0.51**	2.1	0.43	1.3	0.54	<0.0031	<67	**0.14 J**
OA-3	9/14/2015	<0.28	0.40	0.079 J	<0.30	0.079 J	<0.0075	74	<0.11
OA-4	9/14/2015	<0.28	0.39	0.065 J	<0.30	0.076 J	<0.0071	<72	<0.19
	4/8/2016	**0.38**	0.90	0.13 J	0.27	0.12 J	<0.0029	<64	<0.091
Riser Pipe Grab Sample Results									
R-1	9/14/2015	3.0	5.5	3.1	4.8	3.5	1.1	9,000	0.58 J
	4/8/2016	1.0	12	2.5	11	4.4	2.8	820	0.68
R-2	9/14/2015	3.9	6.2	5.6	2.5	4.5	3.0	13,000	1.7 J
	4/8/2016	0.31	1.5	0.27	1.0	0.43	0.0084 J	<55	0.45 J
R-3	9/14/2015	5.6	7.5	6.1	4.2	4.0	13	16,000	1.0 J
	4/8/2016	0.29	2.4	0.54	2.4	1.1	0.038 J	61	0.59 J

Notes:
Samples analyzed using USEPA Method TO-15 with selective ion monitoring (SIM)

Bold indicates result above the screening level
DTSC = Department of Toxic Substances Control
MTBE = methyl tertiary-butyl ether
RSL = Regional Screening Level

Table 1
Outdoor Air, Indoor Air, and Riser Pipe 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

TPHg = total petroleum hydrocarbons as gasoline
USEPA = United States Environmental Protection Agency

* = based on USEPA RSL for total petroleum hydrocarbons (aliphatic low); direct measurement of TPH (aromatic low) is provided by analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds.

< = not detected above the method reporting limit
-- = not available

References:

California Department of Toxic Substances Control (DTSC). 2016. Human Health Risk Assessment (HHRA) Note Number: 3, DTSC-modified Screening Levels. January.
United States Environmental Protection Agency (USEPA). 2015. Regional Screening Level for Resident Ambient Air Table. November.

FIGURES

REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. UAD., OAKLAND EAST AND SAN LEANDRO, CALIFORNIA, 2015.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

1009 66TH AVENUE, OAKLAND, CALIFORNIA

SITE VICINITY MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

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
- SVP-4 — Abandoned Soil Vapor Point Location

NOTES:

SVE = Soil Vapor Extraction
GREY symbols represent abandoned well locations

MW-1
NW-1S, 1I, 1D
SVP-6
SVP-7
F.R.
Building 200
F.R.
SVP-5
SVP-4
SVE-2
AS-2D
AS-2I
SVE-3
AS-3D
SVP-8
AS-3I
SVE-4
AS-4D
AS-4I
UP
EW-1
SVP-10
SVP-9
NW-2S, 2I, 2D
SVE-1
AS-1D
AS-1I
SVP-1
SVMW-2
SVE-5
AS-5D
ASMW-2D
AS-5I
ASMW-2I
Building 300
SVMW-3
ASMW-3D
ASMW-3I
SVP-2
SVP-3
SVE-6
AS-6D
MW-4
AS-6I
SVMW-5
ASMW-5D
ASMW-5I
SVE-7
AS-7D
AS-7I
SVE-8
AS-8D
AS-8I
SVMW-4
ASMW-4D
ASMW-4I
MW-3
NW-3S, 3I, 3D
MW-2
F.R.

0 20 FEET
(SCALE: 1" = 20')

PROPOSED CHARTER SCHOOL SITE
1009 66TH AVENUE
OAKLAND, CALIFORNIA

SITE PLAN

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

IA-01		
Date	9/14/15	4/□/16
Ben□ene	**0.27**	**0.53**
Tol□ene	3.4	2.4
Ethylben□ene	0.45	0.79
m,p-□ylene	1.□	1.6
o-□ylene	0.74	0.60
MTBE	□0.59	□0.61
TPH-GRO	130	□69
Naph (TO-15)	□4.3	**0.13 J**

IA-02		
Date	9/14/15	4/□/16
Ben□ene	**0.28**	**0.54**
Tol□ene	3.9	3.0
Ethylben□ene	0.52	0.51
m,p-□ylene	2.1	1.6
o-□ylene	1.0	0.60
MTBE	□0.62	□0.57
TPH-GRO	130	□64
Naph (TO-15)	□4.5	**0.12 J**

IA-03		
Date	9/14/15	4/□/16
Ben□ene	**0.26 J**	**0.47**
Tol□ene	4.4	2.1
Ethylben□ene	0.52	0.42
m,p-□ylene	2.2	1.3
o-□ylene	0.95	0.53
MTBE	□0.60	--
TPH-GRO	130	□65
Naph (TO-15)	□4.4	**0.12 J**

IA-04		
Date	9/14/15	4/□/16
Ben□ene	□0.27	**0.43**
Tol□ene	3.9	1.6
Ethylben□ene	0.49	0.32
m,p-□ylene	1.9	0.96
o-□ylene	0.□7	0.43
MTBE	□0.60	□0.60
TPH-GRO	120	□6□
Naph (TO-15)	□4.4	□4.4

OA-3	
Date	9/14/15
Ben□ene	□0.2□
Tol□ene	0.40
Ethylben□ene	□0.15
m,p-□ylene	□0.30
o-□ylene	□0.15
MTBE	□0.62
TPH-GRO	74
Naph (TO-15)	□4.5

OA-4		
Date	9/14/15	4/□/16
Ben□ene	□0.2□	**0.38**
Tol□ene	0.39	0.90
Ethylben□ene	□0.15	0.13 J
m,p-□ylene	□0.30	0.27
o-□ylene	□0.15	0.12 J
MTBE	□0.63	□0.57
TPH-GRO	□72	□64
Naph (TO-15)	□4.6	□4.1

IA-05		
Date	9/14/15	4/□/16
Ben□ene	□0.2□	**0.49**
Tol□ene	2.4	2.3
Ethylben□ene	0.50	0.46
m,p-□ylene	2.1	1.4
o-□ylene	0.77	0.55
MTBE	□0.63	□0.62
TPH-GRO	94	□70
Naph (TO-15)	□4.6	**0.17 J**

IA-06		
Date	9/14/15	4/□/16
Ben□ene	**0.28**	**0.51**
Tol□ene	3.6	2.1
Ethylben□ene	0.54	0.43
m,p-□ylene	2.2	1.3
o-□ylene	0.□6	0.54
MTBE	□0.59	□0.59
TPH-GRO	130	□67
Naph (TO-15)	□4.3	**0.14 J**

F.R.

Building 300

RESTROOMS

UP

LEGEND:

- MW-4 — Monitoring Well
- NW-2S, 2I, 2D — Nested Monitoring Well
- AS-7I — Air Injection Well
- ASMW-5D — Air Injection Monitoring Well
- SVE-1 — SVE or SVE Monitoring Well
- SVP-1 — Soil Vapor Point Location
- IA-01 — Indoor Air Sampling Location
- OA-3 — O□tdoor Air Sampling Location
- 1 □t x 4 □t Vent

GREY symbols represent abandoned well locations
SVE = Soil Vapor Extraction
MTBE = Methyl Tertiary-B□tyl Ether
TPH-GRO = Total Petrole□m Hydrocarbons as Gasoline Range Organics
Naph (TO-15) = Naphthalene Sampled Using USEPA Method TO-15
□ = Not Detected abo□e the Laboratory Reporting Limit Gi□en
NS = Not Sampled
--- = Not Sampled □or Naph (TO-17)
BOLD = Indicates Res□lt abo□e the Screening Le□el
All Results are in Micrograms per Cubic Meter (µg/m³)

0 20 FEET
(SCALE: 1" = 20')

PROPOSED CHARTER SCHOOL SITE
1009 66TH AVENUE
OAKLAND, CALIFORNIA

INDOOR AND OUTDOOR AIR SAMPLE LOCATIONS AND ANALYTICAL RESULTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: EMERYVILLE, CA DIV/GROUP: ENV/CAD DB: A. REYES, J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\RETURN-TO\EMERYVILLE, CA\EM009155\001700001\DWG\EM009155 C03.dwg LAYOUT: 3 SAVED: 5/5/2016 12:53 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 5/5/2016 5:03 PM BY: HARRIS, JESSICA

APPENDIX A

Soil Vapor Sample Collection Logs

ARCADIS
Infrastructure, environment, buildings

Air Sampling Log

Project Name: Aspire College

Project Number: EM009455.0017

Weather Observations: Overcast/rainy - sunny

Field Staff: C. McGovern / Cameron McGovern

Sample ID	Sample Canister Number	Start Vacuum	Stop Vacuum	Start Date	Start Time	Stop Date	Stop Time	Start Temp	Stop Temp	Start Baro Pressure	Stop Baro Pressure
R-1	9913	-28	-7.5	4/8/16	1246	4/8/16	1247	64	64	29.99	29.99
R-2	14007	-30	-2.5	↓	1253	↓	1254	64	64	29.99	29.99
R-3	9568	-30	-2.5	↓	1259	↓	1300	64	65	29.99	29.99
IA-01	24078	-30	-8	↓	0730	↓	1516				
IA-02	34195	-30	-5.5	↓	0731	↓	1524				
IA-03	6L1238	-30	-6	↓	0733	↓	1526				
IA-04	6L1278	-30	-7.5	↓	0734	↓	1530				
IA-05	35268	-30	-7	↓	0735	↓	1520				
IA-06	24493	-30	-8	4/8/16	0734	4/8/16	1511				
OA-04	6L0016	-30	-6.5	↓	0729	↓	1503				

Notes: Differential pressures: (in of H_2O)

	Initial	Final
R-1	0.0	0.0
R-2	0.0	0.3
R-3	0.0	0.4

APPENDIX B

Laboratory Analytical Reports

eurofins | Air Toxics

4/25/2016
Ms. Angeline Tan
Arcadis U.S., Inc.
2999 Oak Road
Suite 300
Walnut Creek CA 94597

Project Name: Aspire College
Project #: EM009155.0017.0001
Workorder #: 1604259

Dear Ms. Angeline Tan

The following report includes the data for the above referenced project for sample(s) received on 4/12/2016 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1604259

Work Order Summary

CLIENT:	Ms. Angeline Tan Arcadis U.S., Inc. 2999 Oak Road Suite 300 Walnut Creek, CA 94597	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	925-274-1100	**P.O. #**	EM009155.0017
FAX:	925-274-1103	**PROJECT #**	EM009155.0017.0001 Aspire College
DATE RECEIVED:	04/12/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/25/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	R-1	Modified TO-15	5.3 "Hg	5.1 psi
01B	R-1	Modified TO-15	5.3 "Hg	5.1 psi
02A	R-2	Modified TO-15	0.1 psi	5.1 psi
02B	R-2	Modified TO-15	0.1 psi	5.1 psi
03A	R-3	Modified TO-15	0.1 psi	5.2 psi
03B	R-3	Modified TO-15	0.1 psi	5.2 psi
04A	IA-01	Modified TO-15	5.9 "Hg	5.2 psi
04B	IA-01	Modified TO-15	5.9 "Hg	5.2 psi
05A	IA-02	Modified TO-15	4.1 "Hg	5.2 psi
05B	IA-02	Modified TO-15	4.1 "Hg	5.2 psi
06A	IA-03	Modified TO-15	4.9 "Hg	5 psi
06B	IA-03	Modified TO-15	4.9 "Hg	5 psi
07A	IA-04	Modified TO-15	5.9 "Hg	5 psi
07B	IA-04	Modified TO-15	5.9 "Hg	5 psi
08A	IA-05	Modified TO-15	6.1 "Hg	5.3 psi
08B	IA-05	Modified TO-15	6.1 "Hg	5.3 psi
09A	IA-06	Modified TO-15	5.5 "Hg	5 psi
09B	IA-06	Modified TO-15	5.5 "Hg	5 psi
10A	OA-04	Modified TO-15	4.3 "Hg	5.1 psi
10B	OA-04	Modified TO-15	4.3 "Hg	5.1 psi
11A	Lab Blank	Modified TO-15	NA	NA
11B	Lab Blank	Modified TO-15	NA	NA
12A	CCV	Modified TO-15	NA	NA

Continued on next page

eurofins | Air Toxics

WORK ORDER #: 1604259

Work Order Summary

CLIENT:	Ms. Angeline Tan Arcadis U.S., Inc. 2999 Oak Road Suite 300 Walnut Creek, CA 94597	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	925-274-1100	**P.O. #**	EM009155.0017
FAX:	925-274-1103	**PROJECT #**	EM009155.0017.0001 Aspire College
DATE RECEIVED:	04/12/2016	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/25/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
12B	CCV	Modified TO-15	NA	NA
13A	LCS	Modified TO-15	NA	NA
13AA	LCSD	Modified TO-15	NA	NA
13B	LCS	Modified TO-15	NA	NA
13BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 04/25/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Arcadis U.S., Inc.
Workorder# 1604259

Ten 6 Liter Summa Canister (SIM Certified) samples were received on April 12, 2016. 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

As per project specific client request, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. All the canisters used for this project have been certified to the Reporting Limit for the target analytes included in this workorder. Concentrations that are below the level at which the canister was certified may be false positives.

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 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.

Definition of Data Qualifying Flags

Nine 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.

CN - See case narrative explanation

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client ID:	R-1		
Lab ID:	1604259-01A	**Date/Time Analyzed:**	4/18/16 04:45 PM
Date/Time Collecte	4/8/16 12:46 PM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041810

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.095	0.86	4.3	0.68 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	67	820

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	100

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

Client ID:	R-1		
Lab ID:	1604259-01B	**Date/Time Analyzed:**	4/18/16 04:45 PM
Date/Time Collecte	4/8/16 12:46 PM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041810sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0038	0.026	0.26	1.0
Ethyl Benzene	100-41-4	0.0065	0.036	0.14	2.5
m,p-Xylene	108-38-3	0.0093	0.036	0.28	11
Methyl tert-butyl ether	1634-04-4	0.0031	0.030	0.59	2.8
o-Xylene	95-47-6	0.0089	0.036	0.14	4.4
Toluene	108-88-3	0.0054	0.031	0.12	12

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	103

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

Client ID:	R-2		
Lab ID:	1604259-02A	**Date/Time Analyzed:**	4/18/16 05:24 PM
Date/Time Collecte	4/8/16 12:53 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041811

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.078	0.70	3.5	0.45 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	55	Not Detected

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	116
Toluene-d8	2037-26-5	70-130	97

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

Client ID:	R-2		
Lab ID:	1604259-02B	**Date/Time Analyzed:**	4/18/16 05:24 PM
Date/Time Collecte	4/8/16 12:53 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041811sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0031	0.021	0.21	0.31
Ethyl Benzene	100-41-4	0.0053	0.029	0.12	0.27
m,p-Xylene	108-38-3	0.0076	0.029	0.23	1.0
Methyl tert-butyl ether	1634-04-4	0.0025	0.024	0.48	0.0084 J
o-Xylene	95-47-6	0.0073	0.029	0.12	0.43
Toluene	108-88-3	0.0044	0.025	0.10	1.5

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	114
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	R-3		
Lab ID:	1604259-03A	**Date/Time Analyzed:**	4/18/16 06:15 PM
Date/Time Collecte	4/8/16 12:59 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041812

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.078	0.70	3.5	0.59 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	55	61

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	116
Toluene-d8	2037-26-5	70-130	96

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

Client ID:	R-3		
Lab ID:	1604259-03B	**Date/Time Analyzed:**	4/18/16 06:15 PM
Date/Time Collecte	4/8/16 12:59 PM	**Dilution Factor:**	1.34
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041812sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0031	0.021	0.21	0.29
Ethyl Benzene	100-41-4	0.0053	0.029	0.12	0.54
m,p-Xylene	108-38-3	0.0076	0.029	0.23	2.4
Methyl tert-butyl ether	1634-04-4	0.0025	0.024	0.48	0.038 J
o-Xylene	95-47-6	0.0073	0.029	0.12	1.1
Toluene	108-88-3	0.0044	0.025	0.10	2.4

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	117
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	IA-01		
Lab ID:	1604259-04A	**Date/Time Analyzed:**	4/18/16 08:06 PM
Date/Time Collecte	4/8/16 07:30 AM	**Dilution Factor:**	1.69
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041814

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.098	0.88	4.4	0.13 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	69	Not Detected

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	94

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

Client ID:	IA-01		
Lab ID:	1604259-04B	**Date/Time Analyzed:**	4/18/16 08:06 PM
Date/Time Collecte	4/8/16 07:30 AM	**Dilution Factor:**	1.69
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041814sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0039	0.027	0.27	0.53
Ethyl Benzene	100-41-4	0.0067	0.037	0.15	0.79
m,p-Xylene	108-38-3	0.0096	0.037	0.29	1.6
Methyl tert-butyl ether	1634-04-4	0.0032	0.030	0.61	Not Detected
o-Xylene	95-47-6	0.0092	0.037	0.15	0.60
Toluene	108-88-3	0.0056	0.032	0.13	2.4

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	IA-02		
Lab ID:	1604259-05A	**Date/Time Analyzed:**	4/18/16 08:46 PM
Date/Time Collecte	4/8/16 07:31 AM	**Dilution Factor:**	1.57
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041815

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.091	0.82	4.1	0.12 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	64	Not Detected

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	IA-02		
Lab ID:	1604259-05B	**Date/Time Analyzed:**	4/18/16 08:46 PM
Date/Time Collecte	4/8/16 07:31 AM	**Dilution Factor:**	1.57
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041815sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0037	0.025	0.25	0.54
Ethyl Benzene	100-41-4	0.0062	0.034	0.14	0.51
m,p-Xylene	108-38-3	0.0089	0.034	0.27	1.6
Methyl tert-butyl ether	1634-04-4	0.0029	0.028	0.57	Not Detected
o-Xylene	95-47-6	0.0085	0.034	0.14	0.60
Toluene	108-88-3	0.0052	0.030	0.12	3.0

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	IA-03		
Lab ID:	1604259-06A	**Date/Time Analyzed:**	4/18/16 09:26 PM
Date/Time Collecte	4/8/16 07:33 AM	**Dilution Factor:**	1.60
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041816

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.093	0.84	4.2	0.12 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	65	Not Detected

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	96

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

Client ID:	IA-03		
Lab ID:	1604259-06B	**Date/Time Analyzed:**	4/18/16 09:26 PM
Date/Time Collecte	4/8/16 07:33 AM	**Dilution Factor:**	1.60
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041816sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0037	0.026	0.26	0.47
Ethyl Benzene	100-41-4	0.0063	0.035	0.14	0.42
m,p-Xylene	108-38-3	0.0091	0.035	0.28	1.3
Methyl tert-butyl ether	1634-04-4	0.0030	0.029	0.58	Not Detected
o-Xylene	95-47-6	0.0087	0.035	0.14	0.53
Toluene	108-88-3	0.0053	0.030	0.12	2.1

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	IA-04		
Lab ID:	1604259-07A	**Date/Time Analyzed:**	4/18/16 10:07 PM
Date/Time Collecte	4/8/16 07:34 AM	**Dilution Factor:**	1.67
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041817

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.097	0.88	4.4	Not Detected
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	68	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	97

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

Client ID:	IA-04		
Lab ID:	1604259-07B	**Date/Time Analyzed:**	4/18/16 10:07 PM
Date/Time Collecte	4/8/16 07:34 AM	**Dilution Factor:**	1.67
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041817sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0039	0.027	0.27	0.43
Ethyl Benzene	100-41-4	0.0066	0.036	0.14	0.32
m,p-Xylene	108-38-3	0.0095	0.036	0.29	0.96
Methyl tert-butyl ether	1634-04-4	0.0031	0.030	0.60	Not Detected
o-Xylene	95-47-6	0.0091	0.036	0.14	0.43
Toluene	108-88-3	0.0055	0.031	0.12	1.6

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	100

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

Client ID:	IA-05		
Lab ID:	1604259-08A	**Date/Time Analyzed:**	4/18/16 10:46 PM
Date/Time Collecte	4/8/16 07:35 AM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041818

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.099	0.90	4.5	0.17 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	70	Not Detected

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	IA-05		
Lab ID:	1604259-08B	**Date/Time Analyzed:**	4/18/16 10:46 PM
Date/Time Collecte	4/8/16 07:35 AM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041818sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0040	0.027	0.27	0.49
Ethyl Benzene	100-41-4	0.0068	0.037	0.15	0.46
m,p-Xylene	108-38-3	0.0097	0.037	0.30	1.4
Methyl tert-butyl ether	1634-04-4	0.0032	0.031	0.62	Not Detected
o-Xylene	95-47-6	0.0093	0.037	0.15	0.55
Toluene	108-88-3	0.0057	0.032	0.13	2.3

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	100

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

Client ID:	IA-06		
Lab ID:	1604259-09A	**Date/Time Analyzed:**	4/18/16 11:26 PM
Date/Time Collecte	4/8/16 07:34 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041819

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.095	0.86	4.3	0.14 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	67	Not Detected

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	102
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	IA-06		
Lab ID:	1604259-09B	**Date/Time Analyzed:**	4/18/16 11:26 PM
Date/Time Collecte	4/8/16 07:34 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041819sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0038	0.026	0.26	0.51
Ethyl Benzene	100-41-4	0.0065	0.036	0.14	0.43
m,p-Xylene	108-38-3	0.0093	0.036	0.28	1.3
Methyl tert-butyl ether	1634-04-4	0.0031	0.030	0.59	Not Detected
o-Xylene	95-47-6	0.0089	0.036	0.14	0.54
Toluene	108-88-3	0.0054	0.031	0.12	2.1

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	99

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

Client ID:	OA-04		
Lab ID:	1604259-10A	**Date/Time Analyzed:**	4/19/16 08:28 AM
Date/Time Collecte	4/8/16 07:35 AM	**Dilution Factor:**	1.57
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041820

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.091	0.82	4.1	Not Detected
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	64	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	OA-04		
Lab ID:	1604259-10B	**Date/Time Analyzed:**	4/19/16 08:28 AM
Date/Time Collecte	4/8/16 07:35 AM	**Dilution Factor:**	1.57
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msd20.i / 20041820sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0037	0.025	0.25	0.38
Ethyl Benzene	100-41-4	0.0062	0.034	0.14	0.13 J
m,p-Xylene	108-38-3	0.0089	0.034	0.27	0.27
Methyl tert-butyl ether	1634-04-4	0.0029	0.028	0.57	Not Detected
o-Xylene	95-47-6	0.0085	0.034	0.14	0.12 J
Toluene	108-88-3	0.0052	0.030	0.12	0.90

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	98

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

Client ID:	Lab Blank		
Lab ID:	1604259-11A	**Date/Time Analyzed:**	4/18/16 02:07 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041806a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	0.058	0.52	2.6	0.061 J
TPH ref. to Gasoline (MW=100)	9999-9999-038	NA	D	41	Not Detected

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	96

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

Client ID:	Lab Blank		
Lab ID:	1604259-11B	**Date/Time Analyzed:**	4/18/16 02:07 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041806sima

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	0.0023	0.016	0.16	0.0078 J
Ethyl Benzene	100-41-4	0.0040	0.022	0.087	0.012 J
m,p-Xylene	108-38-3	0.0057	0.022	0.17	0.034 J
Methyl tert-butyl ether	1634-04-4	0.0019	0.018	0.36	Not Detected
o-Xylene	95-47-6	0.0054	0.022	0.087	0.014 J
Toluene	108-88-3	0.0033	0.019	0.075	0.019 J

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

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	99

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

Client ID:	CCV		
Lab ID:	1604259-12A	**Date/Time Analyzed:**	4/18/16 10:45 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041802

Compound	CAS#	%Recovery
Naphthalene	91-20-3	80
TPH ref. to Gasoline (MW=100)	9999-9999-038	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	87
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	104

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

Client ID:	CCV		
Lab ID:	1604259-12B	**Date/Time Analyzed:**	4/18/16 10:45 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041802sim

Compound	CAS#	%Recovery
Benzene	71-43-2	108
Ethyl Benzene	100-41-4	124
m,p-Xylene	108-38-3	125
Methyl tert-butyl ether	1634-04-4	112
o-Xylene	95-47-6	126
Toluene	108-88-3	115

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	90
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	106

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

Client ID:	LCS		
Lab ID:	1604259-13A	**Date/Time Analyzed:**	4/18/16 11:32 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041803

Compound	CAS#	%Recovery
Naphthalene	91-20-3	80
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	88
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	103

* % Recovery is calculated using unrounded analytical results.

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

Client ID:	LCSD		
Lab ID:	1604259-13AA	**Date/Time Analyzed:**	4/18/16 12:16 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041804

Compound	CAS#	%Recovery
Naphthalene	91-20-3	77
TPH ref. to Gasoline (MW=100)	9999-9999-038	Not Spiked

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	106

* % Recovery is calculated using unrounded analytical results.

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

Client ID:	LCS		
Lab ID:	1604259-13B	**Date/Time Analyzed:**	4/18/16 11:32 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041803sim

Compound	CAS#	%Recovery
Benzene	71-43-2	108
Ethyl Benzene	100-41-4	125
m,p-Xylene	108-38-3	126
Methyl tert-butyl ether	1634-04-4	110
o-Xylene	95-47-6	127
Toluene	108-88-3	116

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	106

* % Recovery is calculated using unrounded analytical results.

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

Client ID:	LCSD		
Lab ID:	1604259-13BB	**Date/Time Analyzed:**	4/18/16 12:16 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd20.i / 20041804sim

Compound	CAS#	%Recovery
Benzene	71-43-2	108
Ethyl Benzene	100-41-4	125
m,p-Xylene	108-38-3	125
Methyl tert-butyl ether	1634-04-4	110
o-Xylene	95-47-6	126
Toluene	108-88-3	116

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	106

* % Recovery is calculated using unrounded analytical results.

Arcadis U.S., Inc.

100 Smith Ranch Road

Suite 329

San Rafael, California 94903

Tel 415 491 4530

Fax 415 491 4532

www.arcadis.com