Mr. Tim Mullin
Washington State Department of Ecology
Southwest Regional Office
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Olympia, WA 98504-7775

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ENVIRONMENT

Subject:
2018 Vapor Intrusion Investigation Report
PIH Olympia, LLC
415 Capitol Way North, Olympia, Washington
Cleanup Site Id: 5257
Facility Site ID: 1571525
Voluntary Cleanup Program (VCP) Project No. SW1582

Date:
April 10, 2018

Contact:
Paul McCullough

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206 214 7161

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Paul.McCullough
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Our ref:
SEA41774.0002

Dear Mr. Mullin:

On behalf of PIH Olympia, LLC, Arcadis U.S., Inc. (Arcadis) has prepared this 2018 Vapor Intrusion Investigation Report (report) to document the results of the second round of sub-slab and indoor air testing at the DoubleTree Hotel located at 415 Capitol Way North, Olympia, Washington (Property). A location map is presented as **Figure 1**.

The purpose of this sampling event was to further evaluate a potential vapor intrusion (VI) pathway into indoor air for naphthalene, including potential temporal variability in naphthalene concentrations in indoor air and sub-slab vapor, as requested by Washington State Department of Ecology (Ecology) in a letter dated September 26, 2017 (Ecology 2017).

The work was performed in accordance with the Revised Work Plan for Additional Vapor Intrusion/Indoor Air Investigation dated November 7, 2017 (November 2017 Work Plan) and Ecology's Guidance for Evaluating Soil Vapor Intrusion in Washington State (Ecology 2016). The November 2017 Work Plan was approved by Ecology in an email dated November 9, 2017 and subsequent approval letter dated November 28, 2017. Sampling activities were performed in accordance with the substantive requirements of the Model Toxics Control Act (MTCA) under Ecology's VCP.

SITE AND SURROUNDING AREA DESCRIPTION

The Property is located between the East and West Bay of Budd Inlet, north of the mouth of the Deschutes River at 415 Capitol Way North in Olympia, Washington and is bordered to the north by A Avenue, to the east by Capitol Way North, to the south by Thurston Avenue, and to the west by Columbia Street Northwest (**Figure 1**). The Site is defined as all areas where hazardous substances originating from the Property have come to be located. Currently available data suggest that petroleum hydrocarbon-affected soil and groundwater do not extend beyond the Property boundary at levels above applicable MTCA cleanup levels (CULs). The Property is currently constructed as a DoubleTree Hotel and associated parking. The current three-story building, constructed in 1999 and retrofitted in 2013, occupies the eastern portion of the parcel and an asphalt-paved parking lot occupies the western portion. The hotel includes a swimming pool, spa, fitness center, business center, bar/lounge, meeting rooms, a retail shop, and hotel/guest laundry facilities. The current layout of the Property is presented on **Figure 2**.

SUMMARY OF PREVIOUS VAPOR INTRUSION INVESTIGATION RESULTS

Vapor intrusion investigation related sampling has been completed during three prior sampling events at the Property conducted in June 2017, September 2017, and November 2017. A summary of each event and other VI investigation activities is provided below. Results of these sampling events are presented in **Table 1** for reference. Further details and discussion on these previous sampling events are presented in the Vapor Intrusion Investigation Report dated December 18, 2017, which was previously submitted to Ecology (Arcadis 2017).

June 2017 Sampling Event

The initial June 26, 2017 indoor air sampling event at the Property was performed in accordance with the Work Plan for Additional Site Characterization dated April 10, 2017 and included collection of indoor air samples within three rooms (rooms 132, 142, and 146) of the hotel and at two outdoor (background) locations. The samples were analyzed for a variety of petroleum-related volatile organic compounds (VOCs) using United States Environmental Protection Agency (EPA) Method TO-15 by TestAmerica Laboratories, Inc. in Fife, Washington. These compounds included benzene, toluene, ethyl benzene, and xylenes (BTEX); trimethylbenzene (TMB); naphthalene, 1,2-dichloroethane (1,2-DCA); ethylene dibromide (EDB); 1,3-butadiene; methyl tertiary butyl ether (MTBE); tertiary butyl alcohol (TBA); and methane.

Detectable concentrations of naphthalene were measured in all indoor air samples and in the method blank sample. Due to the detection of naphthalene in the method blank, the naphthalene results for the June 26, 2017 sampling event were deemed unsuitable and warranted resampling. Concentrations of other petroleum related compounds (BTEX, TMB, 1,2-DCA, MTBE, TBA, and methane) were below their respective MTCA Method B indoor air CULs. The compounds 1,3-butadiene and EDB were not detected above their respective analytical reporting limits (RLs). Based on the June 26, 2017 sampling event results, in consultation with Ecology, it was decided that naphthalene was the only potential constituent of concern for indoor air which warranted further investigation.

September 2017 Sampling Event

Re-testing for naphthalene was conducted on September 8, 2017. Air samples were collected from similar locations as the June 26, 2017 sampling event. Naphthalene was analyzed by Eurofins Air Toxics (Air Toxics), an Ecology-approved laboratory located in Folsom, California, using EPA Method TO-17. EPA Method TO-17 was chosen as the preferred analytical method for naphthalene analysis after consultation with the laboratory and Ecology due to lower RLs and less risk of method blank contamination compared to EPA Method TO-15.

Naphthalene was detected in all three indoor air samples at concentrations above the standard MTCA Method B CUL (0.0735 micrograms per cubic meter [µg/m^3]), at concentrations of 0.19 µg/m^3, 0.18 µg/m^3, and 0.32 µg/m^3, in Rooms 132, 142, and 146, respectively. It is also noteworthy that these concentrations are within the Ecology-published range of potential indoor air background concentrations (Ecology 2018).

November 2017 Sampling Event and VI Investigation

Based on the confirmed detections of naphthalene above MTCA Method B CULs in indoor air from the September 2017 sampling event, Ecology requested further actions to investigate the potential VI pathway for naphthalene in a letter dated September 26, 2017. The September 26, 2017 letter requested that PIH Olympia, LLC submit a Work Plan "*to sufficiently evaluate the nature and extent of naphthalene in shallow soil-vapor and indoor air, including temporal variability of this constituent along with a strategy for appropriately monitoring and mitigating this potential threat".* Additionally, Ecology requested that the Work Plan consider:

- Effect of the Facility's heating, ventilation, and air conditioning (HVAC) system on naphthalene concentrations associated with building pressurization/depressurization and air exchange cycles;
- Collection of indoor air samples from additional rooms to evaluate for vapor "hot spots" and preferential pathways;
- Evaluation of preferential vapor-pathways in rooms exhibiting elevated concentrations in indoor air; and
- Evaluation of sub-slab concentrations of naphthalene in soil-vapor beneath the Facility to assist in the identification of potential source-area(s) of this constituent.

Indoor air and sub-slab vapor sampling was conducted on November 13-14, 2017 in accordance with the November 2017 Work Plan. The November 2017 Work Plan was prepared to address all of Ecology's requirements set forth in the September 26, 2017 letter and was approved by Ecology in an email dated November 9, 2017 and subsequent approval letter dated November 28, 2017.

The November 2017 sampling event consisted of collecting 8 co-located sub-slab vapor samples and indoor air samples at the following locations:

- Conference Room (IA-01)
- Hotel Office Area (IA-02)
- Gym (IA-03)

- Laundry Room (IA-04)
- Hotel Rooms 132 (IA-05), 142 (IA-06), 146 (IA-07), and 107 (IA-08)

Additionally, one outside air sample was collected near the hotel building to assess ambient air background concentrations. Samples were analyzed by Air Toxics for naphthalene using EPA Method TO-17.

Naphthalene was detected in all indoor air samples at concentrations above MTCA Method B CULs, but within the Ecology-published range of potential indoor air background concentrations. The highest indoor air concentration was detected in Room 132 (0.37 µg/m^3). Elevated levels of naphthalene were detected in sub-slab samples in only 2 of the 8 sub-slab samples (20 µg/m^3 in Room 142 and 12 µg/m^3 in Room 146).

Based upon the November 2017 Indoor air and VI sampling, Arcadis completed a human health risk assessment for the Property which was documented in the December 18, 2017 Vapor Intrusion Investigation Report. The human health risk assessment for the Property demonstrated that there were no current unacceptable risks to hotel workers or guests based on the existing commercial land use scenario.

Other Actions

The December 2017 Vapor Intrusion Investigation Report also made several recommendations for future actions to further assess the VI pathway and potential next steps. Along with continued consultation with Ecology, these recommendations included:

(1) Perform an assessment of the HVAC system at the hotel;

(2) Conduct a vacuum influence test to assess the feasibility of using existing piping infrastructure for potential sub-slab system depressurization mitigation system if deemed appropriate in the future; and

(3) Perform additional sub-slab and indoor air testing to evaluate temporal changes in naphthalene concentrations.

These recommended items have been completed. Results are summarized below:

- HVAC System Assessment – Arcadis met with hotel maintenance staff and the hotel's HVAC contractor on December 12, 2017 to investigate potential adjustments to the HVAC system to increase air exchange rates. No practical measures to adjust the HVAC system were identified because the heating and ventilation is largely controlled by wall-mounted Packaged Terminal Air Conditioner (PTAC) units in each room of the hotel that are controlled by hotel guests.
- Vacuum influence testing was performed on December 12, 2017. The test consisted of applying a vacuum (with vacuum truck provided by Clearcreek Contractors of Marysville, Washington) to combinations of subsurface pipes where they terminate in vaults located in the westernmost planter at the Property. Arcadis concurrently measured the vacuum influence at the sub-slab soil vapor probes (SVPs) previously installed within the hotel building (i.e., the SVPs used for sub-slab vapor sampling). Results indicated that extracting from several combinations of pipes (the underground location of which could not be ascertained) could produce a vacuum influence

beneath the floor slab in the southern portion of the Property and could be used for a sub-slab depressurization system if deemed appropriate in the future. The piping stub-out locations in the western planter are not ideally suitably located for a sub-slab depressurization system, so those pipes would likely need to be located and exposed closer to the hotel and then be relocated to a more appropriate location (e.g., the roof of the hotel) if a sub-slab system were to be installed. This would require significant disruption to facility operations.

- Additional sub-slab and indoor air testing was performed February 26-27, 2018. Testing methods and results are further described below.

FEBRUARY 2018 SAMPLING EVENT

The following summarizes the methods and results of the sub-slab and indoor air sampling event conducted on February 26 and 27, 2018.

Sampling Locations

Seven collocated indoor air and sub-slab samples were collected from previously sampled locations inside the hotel. Additionally, one outdoor air sample was analyzed from a previous sampled location in the parking lot outside of the hotel to evaluate potential background concentrations in ambient air potentially contributing to indoor air concentrations. Sample locations are presented on **Figure 2**.

Building Survey

Prior to sampling, Arcadis staff compared historical building surveys from the Property to current conditions. It was determined that the Property conditions and operations had not changed significantly from those conditions documented in the previous building survey performed in November 2017. Building survey information is included in **Attachment A**.

Indoor Air Sampling Methods

Indoor air and outdoor air samples were collected using active sorbent sampling media connected to a calibrated personal air sampling pump and were analyzed for naphthalene using EPA Method TO-17. Sampling ended after an approximate 8-hour sampling period.

The sample collection intakes were placed approximately three to five feet above the ground to simulate receptor breathing space. Weather measurements were recorded from the closest weather station at the beginning and end of the 8-hour sampling period. Field conditions, flow rate, sample volumes, pump specifics, and other applicable information were recorded by field personnel on soil vapor sample collection logs included in **Attachment B**.

Sub-Slab Soil Vapor Sampling Methods

Following the completion of indoor air sampling, sub-slab samples were collected from existing SVPs installed within the hotel. A detailed description of the SVP installation methods is presented in the Vapor Intrusion Investigation Report (Arcadis 2017).

Prior to sampling, sub-slab SVPs were leak tested using a water dam around the installation. Water loss was monitored throughout the purging and sampling process. If water loss occurred, the SVP was reinstalled and the test repeated. All SVPs were purged of 100 milliliters (mL) of soil vapor using a plastic syringe and 3-way valve prior to sampling to ensure samples were representative of subsurface conditions.

Soil vapor samples were collected by actively drawing a sample volume through a sorbent media using a plastic syringe and 3-way valve. A sample volume of 450 mL was collected from each sub-slab SVP with the exception of locations SSV-5 and SSV-6. Two sorbent tubes were collected at SSV-5 and SSV-6 at volumes of 60 mL and 450 mL. The 60-mL samples were submitted to the laboratory for screening purposes and the 450-mL samples were used for laboratory analysis.

Sub-slab SVP sample locations are shown on **Figure 2**. Purge volumes, field conditions, and other applicable information were recorded by field personnel on soil vapor sample collection logs included as **Attachment B**.

Deviations from Work Plan

Collocated indoor air and sub-slab soil vapor samples were not collected from the Gym area (IA-03/SSV-03A). The sub-slab SVP in the Gym posed a health and safety hazard for Property operations and needed to be abandoned after sampling during the November 2017 sampling event. It was determined that the remaining sub-slab SVPs and indoor air locations provided sufficient coverage to evaluate the building.

Outdoor air sample OA-1 located on the roof of the hotel was not analyzed at the lab due to a sample pump malfunction resulting in insufficient volume collected.

Analytical Results

All samples were delivered to Air Toxics under standard chain-of-custody for analysis of naphthalene using EPA Method TO-17.

Indoor air, outdoor air and sub-slab soil vapor sample results from February 2018 are presented on **Table 2** and **Figure 2**. The analytical report is included as **Attachment C**. Indoor air and outdoor air naphthalene results were compared to the MTCA Method B Indoor Air CUL (0.0735 µg/m^3) and sub-slab soil vapor naphthalene results were compared to the MTCA Method B Sub-Slab Soil Gas Screening Level (2.45 µg/m^3). The Sub-Slab Soil Gas Screening level is calculated from the Indoor Air CUL by applying an attenuation factor (AF) of 0.03 per the 2016 update to the 2009 Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State (Ecology 2016) as follows:

Indoor Air CUL ÷ AF = Sub-Slab Soil Vapor Screening Value

Results of the February 2018 sampling event were as follows:

- Laboratory analytical data indicate that naphthalene concentrations in indoor air have decreased compared to prior sampling events at all sample locations, including in Rooms 132 and 146, where naphthalene concentrations have historically been the highest. The previous highest indoor air concentrations of naphthalene at the Property were detected in Room 132 during the November 2017 sampling event at a concentration of 0.37 µg/m^3, followed by Room 142 with a

detected concentration of 0.32 µg/m^3 during the September 2017 sampling event (Table 1). Please note that the naphthalene data from the June 2017 sampling event was determined to be unusable because of the detection of naphthalene in the laboratory method blank. Therefore, the June 2017 naphthalene data should not be used for quantitative purposes.

- There were no detections of naphthalene in any of the sub-slab soil vapor samples at concentrations above the laboratory RL of 2.2 µg/m^3. This RL is below the sub-slab soil gas MTCA Method B screening level of 2.45 µg/m^3. In the November 2017 sampling event, naphthalene was detected in only two of the eight locations sampled (20 µg/m^3 beneath Room 142 and 12 µg/m^3 beneath Room 146).
- Naphthalene was detected at concentrations above laboratory reporting limits in six of the seven indoor air samples. All detections exceeded the MTCA Method B Indoor Air CUL of 0.0735 µg/m^3, but were within the Ecology-published range of potential background indoor air concentrations.
- Naphthalene was detected in the outdoor air background sample at a concentration of 0.094 µg/m^3. This concentration is similar to the naphthalene concentrations detected in all of the indoor air samples. If the outside ambient air sample result were subtracted from the indoor air sample results, the adjusted indoor air concentrations from all of the samples collected during the February 2018 sampling event would fall below the MTCA Method B CUL for naphthalene.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the February 2018 sampling event, and in consideration of previous sampling results and VI investigation activities, Arcadis offers the following conclusions with respect to naphthalene:

- Due to the detection of naphthalene in the laboratory method blank, the June 2017 naphthalene data has been disqualified and should therefore not be used for quantitative purposes. Excluding the June 2017 sampling event for naphthalene, three rounds of indoor air sampling have now been completed at the Property (September 2017, November 2017, and February 2018) to assess temporal variations in naphthalene concentrations, including two rounds of collocated sub-slab and indoor air sampling (November 2017 and February 2018).
- The February 2018 data indicate that indoor air and sub-slab naphthalene concentrations have apparently diminished since the September 2017 and November 2017 sampling events. Based on the February 2018 data, sub-slab naphthalene soil gas concentrations are all below the MTCA Method B screening level of 2.45 µg/m^3 and the indoor air concentrations of naphthalene are at historic lows.
- As documented in the December 2017 Vapor Intrusion Investigation Report, the human health risk assessment based on the November 2017 indoor air naphthalene data (highest concentrations on naphthalene based on validated laboratory data) demonstrate that there is no unacceptable short- or long-term health risk to hotel workers or guests based on a commercial exposure scenario.

- Based on current conditions, it is not considered practical or warranted to adjust the HVAC system or install and operate a sub-slab vapor mitigation system, considering there are no current unacceptable risks based on the current commercial exposure scenario.
- All items requested by Ecology in the September 26, 2017 letter and all items recommended by Arcadis in the December 2017 Vapor Intrusion Report have been addressed. No additional indoor air or sub-slab soil vapor sampling appears to be warranted.

Based on currently available information, Arcadis recommends that Ecology provide a No Further Action (NFA) opinion for the Site subject to implementation of an appropriate Environmental Restrictive Covenant that limits the use of groundwater and restricts land use of the Property to commercial purposes. Arcadis recommends implementation of the NFA opinion through Model Remedy #4 for Sites with Petroleum Impacts to Groundwater. Subject to receiving the NFA or as otherwise approved by Ecology, the groundwater monitoring wells should be decommissioned by a licensed driller and the soil vapor probes removed.

If you have questions or comments regarding the contents of this report, please do not hesitate to contact Paul McCullough at 206-214-7161.

Sincerely,

Arcadis U.S., Inc.

Paul T. McCullough, PE
Principal Environmental Engineer

Copies:
Mike Stone, PIH Olympia, LLC
Robyn Neely, Akerman LLP

References

Arcadis. 2017. Vapor Intrusion Investigation Report. December 18.

Washington State Department of Ecology (Ecology). 2016. Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remediation Action. February.

Ecology 2017. Ecology Letter to Michael Stone, Results of Confirmation Indoor Air Sampling. September 26.

Ecology 2018. Petroleum Vapor Intrusion (PVI): Updated Screening Levels, Cleanup Levels, and Assessing PVI Threats to Future Buildings.

Enclosures:
1 Historical Vapor Intrusion Sampling Analytical Results
2 2018 Naphthalene Sampling Analytical Results

Tables
Figures

1 Site Location Map

2 Sample Location and Analytical Results Map

Attachments

A Historical Building Survey

B February 2018 Sampling Field Documentation

C Laboratory Analytical Report and Chain-of-Custody Documentation

TABLES

Table 1
Historical Vapor Intrusion Sampling Analytical Results
PIH Olympia LLC
415 Capitol Way North, Olympia, WA

All Concentrations are in micrograms per cubic meter (µg/m^3) unless otherwise indicated

Sample Location	Sample ID	Method	Date Collected	Benzene	1,2-DCA	1,2,4-TMB	Naphthalene	EDB	Ethylbenzene	Toluene	m,p-Xylene	o-Xylene	MTBE	1,3-Butadiene	TBA	Methane (% v/v)
Model Toxics Control Act (MTCA) Method B Screening Levels (CULs) in µg/m^3				**0.321**	**0.0962**	**3.2**	**0.0735**	**0.00417**	**457**	**2,290**	**45.7**	**45.7**	**9.62**	**0.0833**	**N/A**	**N/A**
Model Toxics Control Act (MTCA) Method B Sub-Slab Soil Vapor Screening Levels (AF=0.03) in µg/m^3				**10.7**	**3.21**	**N/A**	**2.45**	**0.139**	**N/A**	**N/A**	**N/A**	**N/A**	**320.51**	**2.78**	**N/A**	**N/A**
Room 142	IND-8HR-R142	TO-15	6/26/2017	0.23	0.055 J	0.20	**0.17 B**	***< 0.054***	0.40 J	2.4	1.2 J	0.44J	< 2.9	***< 1.8***	< 6.1	0.00036
Room 132	IND-8HR-R132	TO-15	6/26/2017	0.32	0.063 J	< 0.20	0.063 J B	***< 0.054***	< 1.7	2.2	< 3.5	< 1.7	< 2.9	***< 1.8***	< 6.1	0.00035
Room 146	IND-8HR-R146	TO-15	6/26/2017	0.26	0.058 J	0.27	**0.46 B**	**0.028 J**	0.37 J	2.8	1.2 J	0.47 J	< 2.9	***< 1.8***	< 6.1	0.00036
Parking Lot	OUTD-8HR-PARK	TO-15	6/26/2017	0.19	0.046 J	0.10 J	**0.11 B**	***< 0.054***	< 1.7	0.92 J	0.52 J	< 1.7	< 2.9	***< 1.8***	< 6.1	0.00035
Hotel Roof	OUTD-ROOF	TO-15	6/26/2017	0.25	0.045 J	0.071 J	<0.068	***< 0.054***	<1.7	0.74 J	0.52 J	<1.7	< 2.9	***< 1.8***	<6.1	0.00031
Room 142	IND-8HR-R142	TO-17	9/8/2017	NS	NS	NS	**0.18**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 132	IND-8HR-R132	TO-17	9/8/2017	NS	NS	NS	**0.19**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 146	IND-8HR-R146	TO-17	9/8/2017	NS	NS	NS	**0.32**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Parking Lot	OUTD-8HR-PARK	TO-17	9/8/2017	NS	NS	NS	<0.057	NS	NS	NS	NS	NS	NS	NS	NS	NS
Hotel Roof	OUTD-8HR-ROOF	TO-17	9/8/2017	NS	NS	NS	<0.070	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Blank	Field Blank	TO-17	9/8/2017	NS	NS	NS	<0.068	NS	NS	NS	NS	NS	NS	NS	NS	NS
Conference Room	IA-1	TO-17	11/13/2017	NS	NS	NS	**0.20**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Office Area	IA-2	TO-17	11/13/2017	NS	NS	NS	**0.19**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Gym	IA-3	TO-17	11/13/2017	NS	NS	NS	**0.30**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Laundry	IA-4	TO-17	11/13/2017	NS	NS	NS	**0.29**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 142	IA-6	TO-17	11/13/2017	NS	NS	NS	**0.17**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 146	IA-7	TO-17	11/13/2017	NS	NS	NS	**0.26**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 107	IA-8	TO-17	11/13/2017	NS	NS	NS	**0.26**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Roof	OA-1	TO-17	11/13/2017	NS	NS	NS	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Parking Lot	OA-2	TO-17	11/13/2017	NS	NS	NS	<0.057	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 132	IA-5	TO-17	11/14/2017	NS	NS	NS	**0.37**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Conference Room	SSV-01-450	TO-17	11/14/2017	NS	NS	NS	<2.2	NS	NS	NS	NS	NS	NS	NS	NS	NS
Office Area	SSV-08-450	TO-17	11/14/2017	NS	NS	NS	<2.2	NS	NS	NS	NS	NS	NS	NS	NS	NS
Gym	SSV-03A-450	TO-17	11/14/2017	NS	NS	NS	<2.2	NS	NS	NS	NS	NS	NS	NS	NS	NS
Laundry	SSV-07A-450	TO-17	11/14/2017	NS	NS	NS	<2.2	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 132	SSV-04-450	TO-17	11/14/2017	NS	NS	NS	<2.2	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 142	SSV-05-60	TO-17	11/14/2017	NS	NS	NS	**20**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 146	SSV-06-450	TO-17	11/14/2017	NS	NS	NS	**12**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Room 107	SSV-02-450	TO-17	11/14/2017	NS	NS	NS	<2.2	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 2
February
2018 Naphthalene Sampling Analytical Results
PIH Olympia LLC
415 Capitol Way North, Olympia, WA

Building Location	Sample Location	Sample ID	Sample Type	Date Collected	Sample Duration (min)	Average Flow Rate (mL/min)	Sample Volume (mL)	Naphthalene Result (µg/m^3)
MTCA Method B Indoor Air CUL								**0.0735**
MTCA Method B Sub-Slab Soil Vapor SL (AF = 0.03)								**2.45**
Conference Room	IA-01	IA-1	Indoor Air	2/26/2018	460	28.56	13,138	**0.090**
	SSV-01	SSV-01-450	Sub-Slab	2/27/2018	--	--	450	<2.2
Office Area	IA-02	IA-2	Indoor Air	2/26/2018	464	31.54	14,635	**0.089**
	SSV-08	SSV-08-450	Sub-Slab	2/27/2018	--	--	450	<2.2
Laundry	IA-04	IA-4	Indoor Air	2/26/2018	438	29.84	13,070	**0.11**
	SSV-07A	SSV-07A-450	Sub-Slab	2/27/2018	--	--	450	<2.2
Room 132	IA-05	IA-5	Indoor Air	2/26/2018	460	29.05	13,363	**0.12**
	SSV-04	SSV-04-450	Sub-Slab	2/27/2018	--	--	450	<2.2
Room 142	IA-06	IA-6	Indoor Air	2/26/2018	461	24.92	11,488	**<0.087**
	SSV-05	SSV-05-450	Sub-Slab	2/27/2018	--	--	450	<2.2
Room 146	IA-07	IA-7	Indoor Air	2/26/2018	455	26.47	12,044	**0.12**
	SSV-06	SSV-06-450	Sub-Slab	2/27/2018	--	--	450	<2.2
Room 107	IA-08	IA-8	Indoor Air	2/26/2018	460	29.45	13,547	**0.084**
	SSV-02	SSV-02-450	Sub-Slab	2/27/2018	--	--	450	<2.2
Roof	OA-01	OA-1	Outdoor Air	2/26/2018	124	31.99	3,967	NA
Parking Lot	OA-02	OA-2	Outdoor Air	2/26/2018	444	28.16	12,503	**0.094**

Notes:

< = analyte was not detected at indicated reporting limit

-- = not applicable

µg/m^3 = micrograms per cubic meter

CUL = cleanup level

NA = not analyzed

min = minute

mL = milliliter

mL /min = milliliter per minute

MTCA = Washington Department of Ecology Model Toxics Control Act

SL = screening level

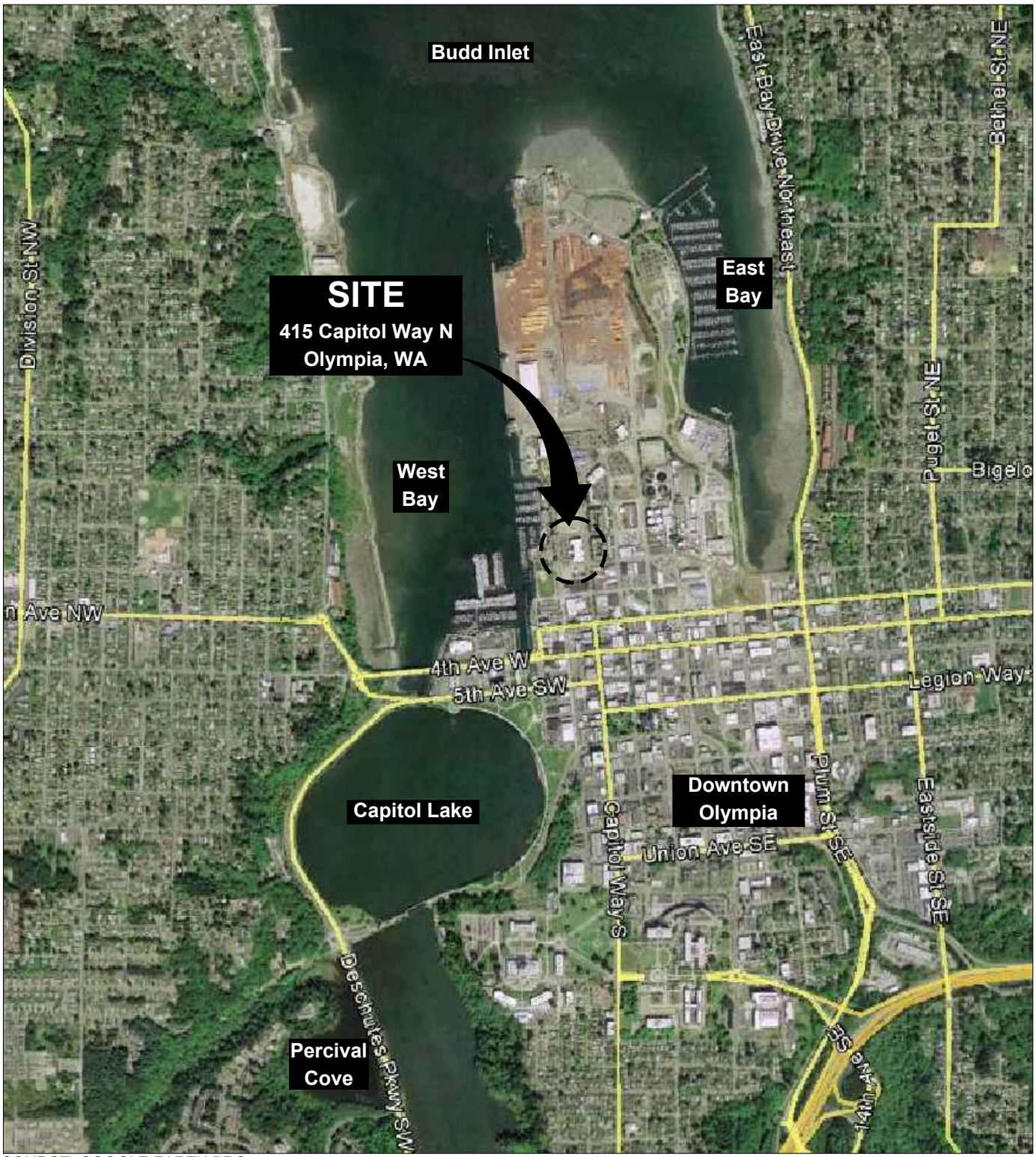
BOLD	Analyte detected above MTCA Method B Cleanup Level (CUL) for Indoor Air or Screening Level (SL) for Sub-Slab Soil Vapor (Ecology 2015)
	Analyte not detected above laboratory detection limit, but laboratory detection limit is above MTCA Method B Cleanup Level (CUL) for Indoor Air or Vapor (Ecology 2015)

Naphthalene analyzed using Modified TO-17 VI

Indoor air samples collected over approximately 8-hours

Sub-slab soil vapor samples were collected as grab samples after a 100 milliliter purge

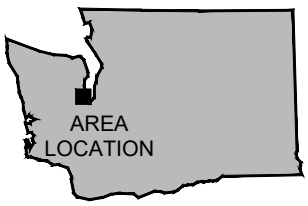
FIGURES



SOURCE: GOOGLE EARTH PRO

0 1500' 3000'

Approximate Scale: 1 in. = 1500 ft.



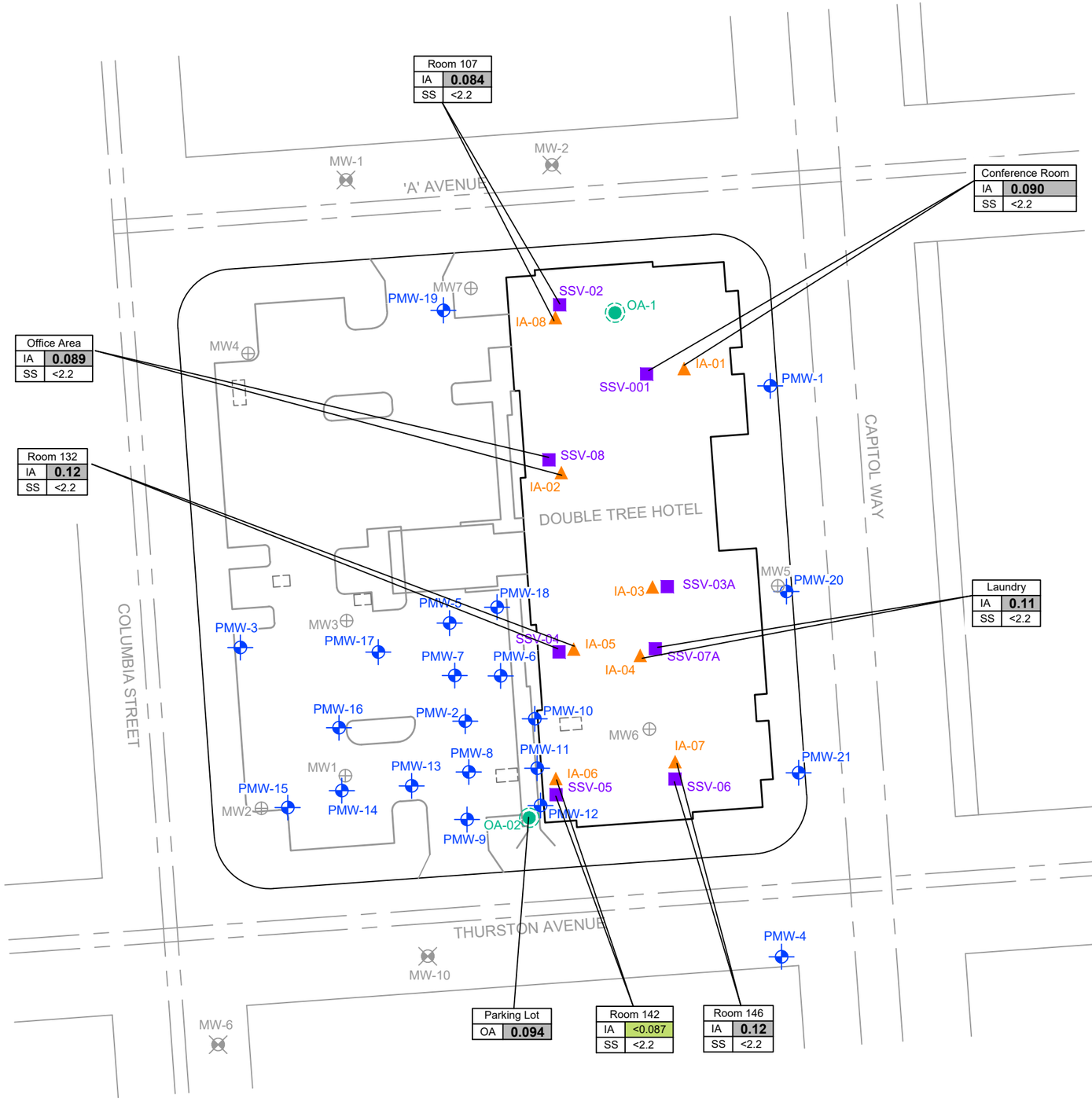
415 CAPITOL WAY NORTH
OLYMPIA, WASHINGTON 98501

2018 VAPOR INTRUSION SAMPLING REPORT

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1



LEGEND:

- PMW-1 — MONITORING WELL LOCATION
- MW-2 — MONITORING WELL ASSOCIATED WITH ADJACENT SITE
- MW7 — FORMER ON-SITE WELL LOCATION
- INDOOR AIR SAMPLING LOCATION
- OUTDOOR AIR SAMPLING LOCATION
- SUB-SLAB SOIL VAPOR SAMPLING LOCATION
- APPROXIMATE FORMER UNDERGROUND STORAGE TANK LOCATION

DATABOX EXAMPLE

SAMPLE LOCATION	
INDOOR AIR	NAPHTHALENE
SUB-SLAB	NAPHTHALENE

ALL SAMPLES COLLECTED BETWEEN FEBRUARY 26 AND 27, 2018.

BOLD — ANALYTE DETECTED ABOVE MTCA METHOD B CLEANUP LEVEL (CUL) FOR INDOOR AIR OR SCREENING LEVEL (SL) FOR SUB-SLAB SOIL VAPOR (ECOLOGY 2015)

VALUE — ANALYTE NOT DETECTED ABOVE LABORATORY DETECTION LIMIT, BUT LABORATORY DETECTION LIMIT IS ABOVE MTCA METHOD B CLEANUP LEVEL (CUL) FOR INDOOR AIR OR SCREENING LEVEL (SL) FOR SUB-SLAB SOIL VAPOR (ECOLOGY 2015)

NOTES:

1. RESULTS ARE PRESENTED IN MICROGRAMS PER CUBIC METER (µg/m3).
2. INDOOR AIR AND SUB-SLAB SOIL VAPOR SAMPLE LOCATIONS ARE APPROXIMATE.

SOURCES: EMPI 200O; ENVIROS, INC. 1994.
SURVEY BY A-LINE LAND SURVEYING 2018.

0 50' 100'

Approximate Scale: 1 in. = 50 ft.

415 CAPITOL WAY NORTH
OLYMPIA, WASHINGTON 98501

2018 VAPOR INTRUSION SAMPLING REPORT

SAMPLE LOCATION AND ANALYTICAL RESULTS MAP

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FIGURE 2

ATTACHMENT A

Historical Building Survey

Building Survey and Product Inventory Form

Directions: This form must be completed for each building or area planned to be evaluated for the study.

Preparer's Name: Rory Henneck

Date/Time Prepared: 11/13/17 15:47

Preparer's Affiliation: Arcadis U.S. Inc.

Phone No.: 206-726-4732

Purpose of Investigation: Indoor air and sub-slab evaluations

1. OCCUPANT:

Interviewed: Y / N

Last Name: Double Tree by Hilton First Name: NA spoke with Scott Borges

Address: 415 Capitol N

County: Thurston

Home Phone: NA Office Phone: 360-570-0555

Number of Occupants/Persons at this Location: Varies ~ 100 guests people, ~70 rooms, ~15 employees

Age of Occupants: Varies

2. OWNER OR LANDLORD: (Check if Same as Occupant _)

Interviewed: Y / N

Last Name: Blackstone First Name: NA

Address: NA

County: NA

Home Phone: NA Office Phone: NA

3. BUILDING CHARACTERISTICS:

Type of Building: (circle appropriate response)

Residential	School	(Commercial/Multi-use)
Industrial	Church	Other:_____

If the Property is Residential, Type? (circle appropriate response)

Ranch		2-Family 3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: NA

If Multiple Units, How Many? 102 rooms

If the Property is Commercial, Type?

Business Type(s) hotel

Does it include residences (i.e., multi-use)? Y / (N) If yes, how many? NA

Other Characteristics:

Number of Floors 3 Building Age ~16 yrs

Is the Building Insulated? (Y) / N How Air-Tight? Tight / (Average) / Not Tight

4. AIRFLOW:

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow Between Floors

HVAC units located on first floor. Ducting extends between floors and draws air from intakes on the north and south sides of the roof. PTAC units are located in individual rooms and exchange air from the room.

10.0 ppm isobutylene resulting from ppbRAE.

Airflow Near Source

Based on groundwater analytical results, the southern portion of the hotel property exhibits the highest concentrations of petroleum hydrocarbons. Indoor air sources of naphthalene have not been identified. Airflow consists of inter-floor air exchange and room air exchange with likely mixing from open doors.

Outdoor Air Infiltration

The building possesses 3 entrances on the west side, providing opportunities for outdoor air to infiltrate. Sewer ventilation lines may present limited opportunity. Windows in conference room open. Man door to Capitol Wy & NE corner also. Guest windows open.

Infiltration Into Air Ducts

Air ducts observed appeared to be sealed.

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS:** (circle all that apply)

a.	**Above grade construction:**	wood frame	(concrete)	stone brick	
b.	**Basement type:**	full	crawlspace	slab	other NA
c.	**Basement floor:**	concrete	dirt	stone	other NA
d.	**Basement floor:**	uncovered	covered	covered with NA	
e.	**Concrete floor:**	unsealed	sealed	sealed with _____	
f.	**Foundation walls:**	poured	block stone	other _____	
g.	**Foundation walls:**	unsealed	sealed	sealed with _____	
h.	**The basement is:**	wet	damp	dry	moldy Not Applicable
i.	**The basement is:**	finished	unfinished	partially finished	Not Applicable
j.	**Sump present?**	(Y) N RH			
k.	**Water in sump?**	Y / N / (NA) RH			

Basement/lowest level depth below grade: _____ (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Sprinkler room (SE portion of facility) has an opening to ground. Floor conduits through electrical room within ABS pipe.

Are the basement walls or floor sealed with waterproof paint or epoxy coatings? Y / N N/A no basement

6. HEATING, VENTILATING, AND AIR CONDITIONING: (circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	✓Heat pump	Hot water baseboard
Space heaters	Stream radiation	Radiant floor
Electric baseboard	Wood stove	Outdoor wood boiler
Other _____		

The primary type of fuel used is:

✓Natural gas	Fuel oil	Kerosene
secondary → Electric	Propane	Solar
Wood coal		

Domestic hot water tank fueled by: NA – natural gas

Boiler/furnace located in: Basement Outdoors (Main Floor) Other Third fl. elec.

Air conditioning: (Central Air) Window Units (Open Windows) None PTACS (floor level)

Are there air distribution ducts present? (Y) N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

Return air near floor outside furnace rooms on first and third floors.

Supply air from roof.

Ducts appear tight.

7. OCCUPANCY:

Is basement/lowest level occupied? (Full-time) Occasionally Seldom Almost Never

General Use of Each Floor (e.g., family room, bedroom, laundry, workshop, storage):

Basement N/A

1st Floor hotel room, laundry, kitchen, dining area, storage, office

2nd Floor hotel room, storage

3rd Floor hotel room, storage

4th Floor NA

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY:

a. **Is there an attached garage?** Y / (N)

b. **Does the garage have a separate heating unit?** Y / (N) / NA

c. **Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, ATV, car)?**
Y / N / (NA) Please specify: No garage

d. **Has the building ever had a fire?** Y / (N) When? _____

e. **Is a kerosene or unvented gas space heater present?** Y / (N) Where? _____

f. **Is there a workshop or hobby/craft area?** Y / (N) Where & Type? _____

g. **Is there smoking in the building?** Y / (N) How frequently? _____

h. **Have cleaning products been used recently?** (Y) / N When & Type? Daily, almost

i. **Have cosmetic products been used recently?** (Y) / N When & Type? Daily

j. Has painting/staining been done in the last 6 months? (Y) / N Where & When? Thresholds

k. **Is there new carpet, drapes or other textiles?** Y / (N) **Where & When?** Not in 5 years.

l. **Have air fresheners been used recently?** (Y) / N When & Type? Deodorizer in common bathrooms.

m. **Is there a kitchen exhaust fan?** Y / (N) If yes, where _____

n. **Is there a bathroom exhaust fan?** (Y) / N If yes, where vented? Venting to roof

o. **Is there a clothes dryer?** (Y) / N **If yes, is it vented outside?** (Y) / N

p. **Has there been a pesticide application?** Y / (N) When & Type? Only if an ant problem outside.

q. **Are there odors in the building?** (Y) / N

If yes, please describe: elevator room (chemicals), pool room (chlorine)

Do any of the building occupants use solvents (e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist) at work? Y / (N)

If yes, what types of solvents are used? NA

If yes, are their clothes washed at work? Y / (N)

Do any of the building occupants regularly use or work at a dry-cleaning service? (circle appropriate response)

(Yes, use dry-cleaning regularly (weekly)) No

(Yes, use dry-cleaning infrequently (monthly or less)) Unknown

Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / (N)

Date of Installation: NA

Is the system active or passive? Active/Passive

Are there any Outside Contaminant Sources? (circle appropriate responses)

Contaminated site with 1000-foot radius? (Y) / N Specify _____

Other stationary sources nearby (e.g., gas stations, emission stacks, etc.): _____

_____

Heavy vehicle traffic nearby (or other mobile sources): Normal traffic

9. WATER AND SEWAGE:

Water Supply: (Public Water) Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: (Public Sewer) Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION: (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: Not applicable

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel NA

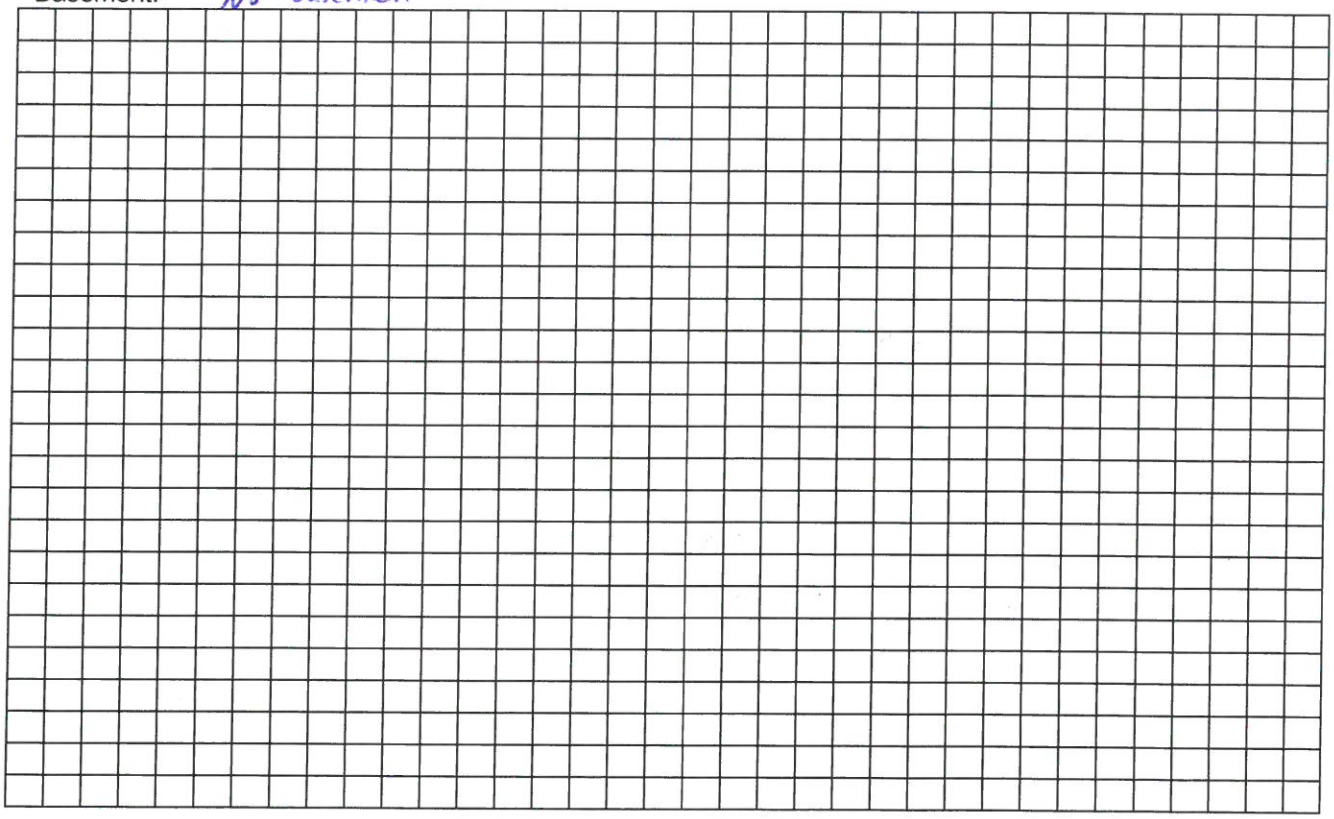
c. Responsibility for costs associated with reimbursement explained? Y / N NA

d. Relocation package provided and explained to residents? Y / N NA

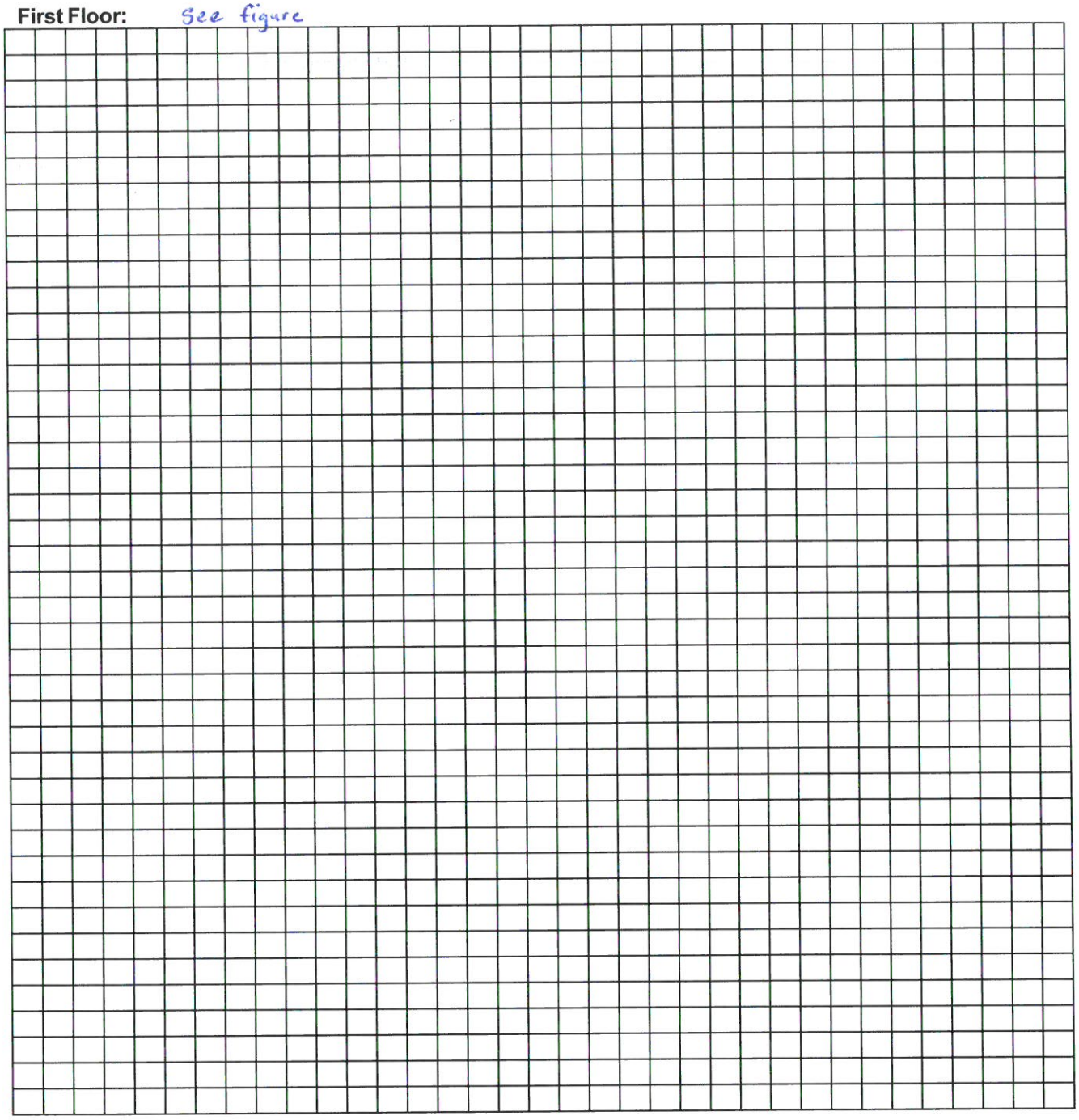
11. FLOOR PLANS:

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement: No basement



First Floor: See figure



ATTACHMENT B

February 2018 Sampling Field Documentation

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	IA-01
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 / S/N: 20110302019
Project:	Doubletree Hotel	**Sample Type:**	Indoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE ~~LRH~~ RL	**Subcontractor:**	N/A 28.80
Sample Point Location:	Conference Room	**Flow Rate:** (Initial)	~~30.12~~ 24 28.31
Sampling Height:	2 3.5-feet	**Sample Duration:**	460
Time and Date of Collection:	02-26 @ 13:06 20:47	**Sample Volume:**	13,135mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-26-18	13:25	~~38~~ 41	74	5 4MPH	30.20	0.0
11	16:09	43	65	SW 5	30.21	0.0
2-26-18	20:23	35	83	SSW 3	30.23	~~0.0~~

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0155283
Sample Volume:	13.1 L
Notes:	

General Observations/Notes:

Average Flow = 28.56

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	~~IA-Office~~ IA-02
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 / SN: 1003
Project:	Doubletree Hotel	**Sample Type:**	Indoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE / ~~RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Office	**Flow Rate:** (mL/min)	29.41 / ~~32.57~~ EE 33.66
Sampling Height:	4 ft	**Sample Duration:**	464
Time and Date of Collection:	13:00 2/26/18 20:44	**Sample Volume:**	~~14,374 mL~~ EE 14,632 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
02-26	13:29	~~38~~ EE 41	74	S 4	30.2	1.0
"	18:13	43	65	SW 5	30.21	7.0
2/26/18	20:23	35	83	SSW 3	30.23	5.0

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0151165
Sample Volume:	~~14.4 L~~ EE 14.6L
Notes:	

General Observations/Notes:

Average Flow = ~~30.99 mL/min~~ EE 31.54 mL/min

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	IA-04
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 SN: 20110701004
Project:	Doubletree Hotel	**Sample Type:**	Indoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE / ~~RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Laundry Room	**Flow Rate:**	29.84 ml/min / NA
Sampling Height:	2 4 Feet	**Sample Duration:**	438
Time and Date of Collection:	02-26 @ 13:16 20:56 (Disconnected) *	**Sample Volume:**	13,070 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-26-18	13:25	~~74~~ 41	74	S 4	30.20	10
2-26	16:16	43	65	SW 5.	30.21	52
2-26-18	20:23	~~83~~ 35	83	SSW 3	30.24	20

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	60187164
Sample Volume:	13.1 L
Notes:	

General Observations/Notes:

* Pump fault display "SHUT OFF" upon arrival, retrieved run time

* Unable to measure post-flow from pump. No apparent flow. Using Pre-Sample cal. for Volume Calculation.

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	IA-05
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 / SN: 1011
Project:	Doubletree Hotel	**Sample Type:**	Indoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE / ~~RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Room 132	**Flow Rate:**	29.75 ml/min / ~~20.46 ml/min~~ 28.34 ml/min
Sampling Height:	2 3 - feet	**Sample Duration:**	460
Time and Date of Collection:	02-26 @1320 21:01	**Sample Volume:**	13,361 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-26-18	1356	41	74	SW 4	30.2	7.0
"	1615	43	65	SW 5	30.21	~~0.0~~ 4.0
2-26-18	20:23	35	83	SSW 3	30.24	3.0

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	BG 004837 4
Sample Volume:	13.4 L.
Notes:	

General Observations/Notes:

Average Flow= 29.05 ml/min

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	IA-06
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 / SN: 0110701004
Project:	Doubletree Hotel	**Sample Type:**	Indoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE / ~~RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Room 142	**Flow Rate:**	29.71 ml/min / 20.12 mV/min
Sampling Height:	23-feet	**Sample Duration:**	461
Time and Date of Collection:	13:26 2/26/18 21:06	**Sample Volume:**	~~24 cc~~ 11.5486

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-26-18	13:28	41	74	S 4	30.20	—
2-26-18	16:12	43	65	SW 5	30.21	—
2-26-18	20:23	35	83	SSW 3	30.24	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0148357
Sample Volume:	11.5 L
Notes:	

General Observations/Notes:

Average Flow= 24.92 mL/min

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Indoor Sample Collection Log

		Sample ID:	IA-07
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 / SN: 20110701010
Project:	Doubletree Hotel	**Sample Type:**	Indoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE / RH	**Subcontractor:**	N/A
Sample Point Location:	Room 146	**Flow Rate:**	29.05 ml/min / 23.89 ml/min
Sampling Height:	3'	**Sample Duration:**	455
Time and Date of Collection:	13:47 2/26/18 21:22	**Sample Volume:**	12,044

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-26-18	13:28	41	74	SW 4	30.20	—
2-26-18	16:19	43	65	SW 5	30.21	0.0
2-26-18	20:23	35	83	SSW 3	30.24	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0153014
Sample Volume:	12.0 L.
Notes:	

General Observations/Notes:

Average flow = 26.47 ml/min

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	IA-OP
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 / SN: 0116701013
Project:	Doubletree Hotel	**Sample Type:**	Indoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE ~~LRH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Room 107	**Flow Rate:** (mL/min)	~~30.0~~ RL 29.16 / 29.74
Sampling Height:	23-feet	**Sample Duration:**	460
Time and Date of Collection:	02-26 @ 13:11 20:51	**Sample Volume:**	13,547 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
02-26-18	15:28	41 ~~38~~	74	5 MPH	30.2	0.0
11	16:12	43	65	SW 5MPH	30.21	1.0
02-26-18	20:23	35	83	SSW 3	30.24	0.0

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0145511
Sample Volume:	13.5 L
Notes:	

General Observations/Notes:

Average Flow = 29.45 ml/min

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	OA-01
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 SN: ~~800887~~ 20110700012
Project:	Doubletree Hotel	**Sample Type:**	Outdoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE / RH RL	**Subcontractor:**	N/A
Sample Point Location:	Outside Roof	**Flow Rate:**	30.87 ml/min ~~30.18 ml/min~~ RL 33.11 ml/min
Sampling Height:	4 ft.	**Sample Duration:**	124 *
Time and Date of Collection:	13:12 2/26/18 20:31 (Disconnected)*	**Sample Volume:**	3,967 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2/26/18	13:12	45°F	74	S 4	30.02	0.0
2/26/18	16:09	43	65	SW 5	30.21	0.0
2/26/18	20:23	35	83	SSW 3	30.23	0.0

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0151834
Sample Volume:	3.97 L
Notes:	

General Observations/Notes:

*Upon arrival, pump was reading "SHUT OFF", retrieval of run time gave us 124 min

Average Flow: 31.99 ml/min

ARCADIS Design & Consultancy for natural and built assets

Indoor Sample Collection Log

		Sample ID:	OA-02
Client:	PIH Olympia, LLC	**Sample Equipment:**	Gilair 5 / S/N: 20110201014
Project:	Doubletree Hotel	**Sample Type:**	Outdoor Air
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Low-Flow Controller
Samplers:	EE ~~/RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Outside Parking lot	**Flow Rate:** (ml/min)	29.31 ~~31.40 ml/min~~ RL 27.00
Sampling Height:	3A	**Sample Duration:**	~~443~~ RL 444
Time and Date of Collection:	12:50 2/26/18 20:15 2/26/18	**Sample Volume:**	~~12,500 cc~~ 12,501 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-26-18	13:25	41	74	S 4	30.20	0.0
2-26-18	16:09	43	65	SW 5	30.21	0.0
2-26-18	20:23	35	83	SSW 3	30.25	0.0

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	GB37124
Sample Volume:	12.5 L
Notes:	

General Observations/Notes:

Average Flow = 28.16 ml/min

ARCADIS Design & Consultancy for natural and built assets

Soil Vapor Sample Collection Log

		Sample ID:	SSV-01
Client:	PIH Olympia, LLC	**Probe Equipment:**	Rotary Hammer Drill
Project:	Doubletree Hotel	**Probe Type:**	Vapor Pin
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Plastic Syringe
Samplers:	EE / ~~RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Conference Room	**Moisture Content of Sampling Zone:**	Dry
Sampling Depth:	Sub-Slab	**Purge Method:**	Plastic Syringe
Time and Date of Collection:	2-27-18 @ 07:54	**Approximate Purge Volume:**	100 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-27-18	0900	40	93	S 13	30.13	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0144403
Sample Volume (mL):	450 mL
Notes:	

General Observations/Notes:

PID @ Probe = 35 ppb

ARCADIS Design & Consultancy for natural and built assets

Soil Vapor Sample Collection Log

		Sample ID:	SSV-02
Client:	PIH Olympia, LLC	**Probe Equipment:**	Rotary Hammer Drill
Project:	Doubletree Hotel	**Probe Type:**	Vapor Pin
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Plastic Syringe
Samplers:	EE / ~~RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Room 107	**Moisture Content of Sampling Zone:**	Dry
Sampling Depth:	Sub-Slab	**Purge Method:**	Plastic Syringe
Time and Date of Collection:	2-27-18 @ 09:59	**Approximate Purge Volume:**	100 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-27-18	0900	40	93	5 13	30.13	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	6014555 35
Sample Volume (mL):	450
Notes:	

General Observations/Notes:

PID @ Probe = 68 ppb

ARCADIS Design & Consultancy for natural and built assets

Soil Vapor Sample Collection Log

		Sample ID:	SSV-04
Client:	PIH Olympia, LLC	**Probe Equipment:**	Rotary Hammer Drill
Project:	Doubletree Hotel	**Probe Type:**	Vapor Pin
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Plastic Syringe
Samplers:	EE / RH	**Subcontractor:**	N/A
Sample Point Location:	Room 132	**Moisture Content of Sampling Zone:**	Dry
Sampling Depth:	Sub-Slab	**Purge Method:**	Plastic Syringe
Time and Date of Collection:	2/27/18 @ 8:20	**Approximate Purge Volume:**	100 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-27-18	0900	40	93	5 13	30.13	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	A00466
Sample Volume (mL):	
Notes:	

General Observations/Notes:

PID @ 460 at probe

ARCADIS Design & Consultancy for natural and built assets

Soil Vapor Sample Collection Log

		Sample ID:	SSV-05-450 / SSV-05-60
Client:	PIH Olympia, LLC	**Probe Equipment:**	Rotary Hammer Drill
Project:	Doubletree Hotel	**Probe Type:**	Vapor Pin
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Plastic Syringe
Samplers:	EE / ~~RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Room 142	**Moisture Content of Sampling Zone:**	Dry
Sampling Depth:	Sub-Slab	**Purge Method:**	Plastic Syringe
Time and Date of Collection:	2-27-18 @ 0900 SSV-05-450 / 2-27-18 @ 0902 SSV-05-60	**Approximate Purge Volume:**	100 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-27-18	0900	40	93	S 13	±0.15	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	60152583 / 60152290
Sample Volume (mL):	450 / 60
Notes:	

General Observations/Notes:

60 ml sample submitted on-hold.

PID @ Probe = 119 ppb

ARCADIS Design & Consultancy for natural and built assets

Soil Vapor Sample Collection Log

		Sample ID:	SSV-06-450 / SSV-06-60
Client:	PIH Olympia, LLC	**Probe Equipment:**	Rotary Hammer Drill
Project:	Doubletree Hotel	**Probe Type:**	Vapor Pin
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Plastic Syringe
Samplers:	EE / RH	**Subcontractor:**	N/A
Sample Point Location:	Room 146	**Moisture Content of Sampling Zone:**	Dry
Sampling Depth:	Sub-Slab	**Purge Method:**	Plastic Syringe
Time and Date of Collection:	2-27-18 450 mL @ 9:00 / 60 mL @ 9:02	**Approximate Purge Volume:**	100 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-27-18	0960	40	93	513	30.13	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	SSV-06-450 = G01139982 / SSV06-60 = G0143671
Sample Volume (mL):	450 / 60
Notes:	2 samples: 450mL first / 60 mL 2nd

General Observations/Notes:

PID = 0.0 at Probe

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Soil Vapor Sample Collection Log

		Sample ID:	SSV-01A
Client:	PIH Olympia, LLC	**Probe Equipment:**	Rotary Hammer Drill
Project:	Doubletree Hotel	**Probe Type:**	Vapor Pin
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Plastic Syringe
Samplers:	EE ~~/ RH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Laundry Room	**Moisture Content of Sampling Zone:**	Dry
Sampling Depth:	Sub-Slab	**Purge Method:**	Plastic Syringe
Time and Date of Collection:	2-27-18 0833	**Approximate Purge Volume:**	100 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-27-18	0900	40	93	5 13	30.13	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	60148988
Sample Volume (mL):	450
Notes:	

General Observations/Notes:

PID @ Probe = 159 ppb

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Soil Vapor Sample Collection Log

		Sample ID:	SSV-08
Client:	PIH Olympia, LLC	**Probe Equipment:**	Rotary Hammer Drill
Project:	Doubletree Hotel	**Probe Type:**	Vapor Pin
Location:	Olympia, Washington	**Tubing Information:**	¼-inch OD Teflon-lined Poly
Project #:	SEA41774.0002	**Miscellaneous Equipment:**	Plastic Syringe
Samplers:	EE / ~~BH~~ RL	**Subcontractor:**	N/A
Sample Point Location:	Office	**Moisture Content of Sampling Zone:**	DRY
Sampling Depth:	Sub-Slab	**Purge Method:**	Plastic Syringe
Time and Date of Collection:	2-27-18 @ 8:00	**Approximate Purge Volume:**	100 mL

Instrument Readings:

Date	Time	Temperature (°F)	Relative Humidity (%)	Air Speed (mph)	Barometric Pressure (inches of Hg)	PID (ppb)
2-27-18	0900	40	93	5 13	30.13	—

Sorbent Information:

Analytical:	**USPEA TO-17**
Tube ID:	G0147222
Sample Volume (mL):	450 mL
Notes:	

General Observations/Notes:

PID @ Probe = 0.0 PPB

Had glued carpet down to cap, made carpet stiff & broke when peeling back

TO-17 SAMPLE COLLECTION

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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 Pam McCullough

Collected by: (Print and Sign) Eric Epple

Company Arcadis Email eric.epple@arcadis.com

Address 1100 Olive Way, Ste 800 City Seattle State WA Zip 98101

Phone 206-794-6904 Fax

Project Info:
P.O. # SEA41774
Project # SEA41774.0002
Project Name PIH Olympia

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 (ml/min)	Post-Test Flow Rate (ml/min)	Volume (L)	Indoor/Outdoor % RH	Indoor/Outdoor Temp (°F)	Indoor Air	Outdoor Air	Soil Vapor	Other (Field Blank)
	IA-01	G0155283	02/26/18	13:06	20:47	28.80	28.31	13.1	—	72	☒	☐	☐	☐
	IA-02	G0151165	02/26/18	13:00	20:44	29.41	~~32.57~~ 32.66	~~14.6~~ 14.6	~~72~~	72	☒	☐	☐	☐
	IA-04	G0187164	02/26/18	13:16	20:56	29.84	—	13.1	—	72	☒	☐	☐	☐
	IA-05	G0148374	02/26/18	13:20	21:01	29.75	28.34	13.4	—	72	☒	☐	☐	☐
	IA-06	G0148357	02/26/18	13:26	21:06	29.71	20.12	11.5	—	72	☒	☐	☐	☐
	IA-07	G0153014	02/26/18	13:47	21:22	29.65	23.89	12.0	—	72	☒	☐	☐	☐
	IA-08	G0145511	02/26/18	13:11	20:51	29.16	29.74	13.5	—	72	☒	☐	☐	☐
	OA-01	G0151834	02/26/18	13:12	20:31	30.87	33.11	3.97	83	35	☐	☒	☐	☐
	OA-02	G0137124	02/26/18	12:50	20:15	29.31	27.00	12.5	83	35	☐	☒	☐	☐
	Field Blank	A00471	02/26/18	20:20	20:20	—	—	—	—	—	☐	☐	☐	☒

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	2-28-18 / 1700		
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
EPA TO-17 for Naphthalene Only.

Sample Volume for IA-02 is 14.6L.

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
				Yes No None	

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: Paul McCullough
Collected by: (Print and Sign) Eric Epple
Company: Arcadis Email: eric.epple@arcadis.com
Address: 1100 Olive Way, Ste 800 City: Seattle State: WA Zip: 98101
Phone: 206-794-6904 Fax:

Project Info:
P.O. #: SEA41774
Project #: SEA41774.0002
Project Name: PIH Olympia

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 ( )
	SSV-01	G01444403	02/27/18	07:34	07:34	—	—	450	—	72	☐	☐	☒	☐
	SSV-02	G01455S5	02/27/18	07:59	07:59	—	—	450	—	72	☐	☐	☒	☐
	SSV-04	A00466	02/27/18	08:20	08:20	—	—	450	—	72	☐	☐	☒	☐
	SSV-05_450	G0152583	02/27/18	09:00	09:00	—	—	450	—	72	☐	☐	☒	☐
	* SSV-05-60 *	G0152290	02/27/18	09:02	09:02	—	—	60	—	72	☐	☐	☒	☐
	SSV-06-450	G0139432	02/27/18	09:00	09:00	—	—	450	—	72	☐	☐	☒	☐
	* SSV-06-60 *	G0143671	02/27/18	09:02	09:02	—	—	60	—	72	☐	☐	☒	☐
	SSV-07A	G0148988	02/27/18	~~08:33~~	08:53	—	—	450	—	72	☐	☐	☒	☐
	SSV-08	G0147222	02/27/18	09:00	08:00	—	—	450	—	72	☐	☐	☒	☐
											☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	2-28-18/1700		
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
USEPA TO-17 analyzed for Naphthalene only.
* = SSV-05-60 and SSV-06-60 submitted on hold pending 450 ml sample screen ~~analysis~~

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

ATTACHMENT C

Laboratory Analytical Report and Chain-of-Custody Documentation

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3/14/2018
Mr. Eric Epple
Arcadis U.S., Inc.
1100 Olive Way
Ste 800
Seattle WA 98101

Project Name: PIH Olympia
Project #: SEA41774.0002
Workorder #: 1803012A

Dear Mr. Eric Epple

The following report includes the data for the above referenced project for sample(s) received on 3/1/2018 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1803012A

Work Order Summary

CLIENT:	Mr. Eric Epple Arcadis U.S., Inc. 1100 Olive Way Ste 800 Seattle, WA 98101	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	206-726-4755	**P.O. #**	SEA41774
FAX:	206-325-8218	**PROJECT #**	SEA41774.0002 PIH Olympia
DATE RECEIVED:	03/01/2018	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	03/14/2018		

FRACTION #	NAME	TEST
01A	IA-01	Modified TO-17 VI
02A	IA-02	Modified TO-17 VI
03A	IA-04	Modified TO-17 VI
04A	IA-05	Modified TO-17 VI
05A	IA-06	Modified TO-17 VI
06A	IA-07	Modified TO-17 VI
07A	IA-08	Modified TO-17 VI
08A(cancelled)	OA-01	Modified TO-17 VI
09A	OA-02	Modified TO-17 VI
10A	Field Blank	Modified TO-17 VI
11A	SSV-01	Modified TO-17 VI
12A	SSV-02	Modified TO-17 VI
13A	SSV-04	Modified TO-17 VI
14A	SSV-05-450	Modified TO-17 VI
16A	SSV-06-450	Modified TO-17 VI
18A	SSV-07A	Modified TO-17 VI
19A	SSV-08	Modified TO-17 VI
20A	Lab Blank	Modified TO-17 VI
20B	Lab Blank	Modified TO-17 VI
20C	Lab Blank	Modified TO-17 VI
21A	CCV	Modified TO-17 VI
21B	CCV	Modified TO-17 VI
21C	CCV	Modified TO-17 VI

Continued on next page

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WORK ORDER #: 1803012A

Work Order Summary

CLIENT:	Mr. Eric Epple Arcadis U.S., Inc. 1100 Olive Way Ste 800 Seattle, WA 98101	**BILL TO:**	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	206-726-4755	**P.O. #**	SEA41774
FAX:	206-325-8218	**PROJECT #**	SEA41774.0002 PIH Olympia
DATE RECEIVED:	03/01/2018	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	03/14/2018		

FRACTION #	NAME	TEST
22A	LCS	Modified TO-17 VI
22AA	LCSD	Modified TO-17 VI
22B	LCS	Modified TO-17 VI
22BB	LCSD	Modified TO-17 VI
22C	LCS	Modified TO-17 VI
22CC	LCSD	Modified TO-17 VI

CERTIFIED BY: Heidi Hayes DATE: 03/14/18

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified EPA Method TO-17 (VI Tubes)
Arcadis U.S., Inc.
Workorder# 1803012A

Seventeen TO-17 VI Tube samples were received on March 01, 2018. 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***
Distributed Volume Pairs	Collection of distributed volume pairs required for monitoring ambient air to insure high quality.	If site is well-characterized or performance previously verified, single tube sampling may be appropriate. Distributed pairs may be impractical for soil gas collection due to configuration and volume constraints.

Receiving Notes

A revised Chain of Custody (COC) was provided by the client on 03/05/18.

Sample OA-01 was cancelled on 03/05/18 per client's request.

Analytical Notes

A sampling volume of 14.6 L was used to convert ng to ug/m3 for the associated Lab Blanks and sample Field Blank.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

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: IA-01

Lab ID#: 1803012A-01A

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.076	1.2	0.090

Client Sample ID: IA-02

Lab ID#: 1803012A-02A

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.068	1.3	0.089

Client Sample ID: IA-04

Lab ID#: 1803012A-03A

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.076	1.4	0.11

Client Sample ID: IA-05

Lab ID#: 1803012A-04A

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.075	1.6	0.12

Client Sample ID: IA-06

Lab ID#: 1803012A-05A

No Detections Were Found.

Client Sample ID: IA-07

Lab ID#: 1803012A-06A

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.083	1.4	0.12

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Summary of Detected Compounds
EPA METHOD TO-17

Client Sample ID: IA-08

Lab ID#: 1803012A-07A

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.074	1.1	0.084

Client Sample ID: OA-02

Lab ID#: 1803012A-09A

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.080	1.2	0.094

Client Sample ID: Field Blank

Lab ID#: 1803012A-10A

No Detections Were Found.

Client Sample ID: SSV-01

Lab ID#: 1803012A-11A

No Detections Were Found.

Client Sample ID: SSV-02

Lab ID#: 1803012A-12A

No Detections Were Found.

Client Sample ID: SSV-04

Lab ID#: 1803012A-13A

No Detections Were Found.

Client Sample ID: SSV-05-450

Lab ID#: 1803012A-14A

No Detections Were Found.

Client Sample ID: SSV-06-450

Lab ID#: 1803012A-16A

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Summary of Detected Compounds
EPA METHOD TO-17

Client Sample ID: SSV-06-450

Lab ID#: 1803012A-16A

No Detections Were Found.

Client Sample ID: SSV-07A

Lab ID#: 1803012A-18A

No Detections Were Found.

Client Sample ID: SSV-08

Lab ID#: 1803012A-19A

No Detections Were Found.

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Client Sample ID: IA-01
Lab ID#: 1803012A-01A
EPA METHOD TO-17

File Name:	**6030827**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 8:47:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 12:55 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.076	1.2	0.090

Air Sample Volume(L): 13.1
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	76	50-150

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Client Sample ID: IA-02
Lab ID#: 1803012A-02A
EPA METHOD TO-17

File Name:	**6030828**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 8:44:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 01:35 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.068	1.3	0.089

Air Sample Volume(L): 14.6
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	82	50-150

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Client Sample ID: IA-04
Lab ID#: 1803012A-03A
EPA METHOD TO-17

File Name:	**6030829**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 8:56:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 02:15 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.076	1.4	0.11

Air Sample Volume(L): 13.1
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	82	50-150

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Client Sample ID: IA-05
Lab ID#: 1803012A-04A
EPA METHOD TO-17

File Name:	**6030830**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 9:01:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 02:55 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.075	1.6	0.12

Air Sample Volume(L): 13.4
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	75	50-150

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Client Sample ID: IA-06
Lab ID#: 1803012A-05A
EPA METHOD TO-17

File Name:	**6030831**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 9:06:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 03:36 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.087	Not Detected	Not Detected

Air Sample Volume(L): 11.5
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	80	50-150

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Client Sample ID: IA-07
Lab ID#: 1803012A-06A
EPA METHOD TO-17

File Name:	**6030832**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 9:22:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 04:16 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.083	1.4	0.12

Air Sample Volume(L): 12.0
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	80	50-150

eurofins | Air Toxics

Client Sample ID: IA-08
Lab ID#: 1803012A-07A
EPA METHOD TO-17

File Name:	**6030833**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 8:51:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 04:57 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.074	1.1	0.084

Air Sample Volume(L): 13.5
Container Type: TO-17 VI Tube

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

eurofins | Air Toxics

Client Sample ID: OA-02

Lab ID#: 1803012A-09A

EPA METHOD TO-17

File Name:	**6030834**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 8:15:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 05:38 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.080	1.2	0.094

Air Sample Volume(L): 12.5
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	65	50-150

eurofins | Air Toxics

Client Sample ID: Field Blank

Lab ID#: 1803012A-10A

EPA METHOD TO-17

File Name:	**6030826**	**Date of Extraction: NA**	**Date of Collection: 2/26/18 8:20:00 PM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 12:14 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.068	Not Detected	Not Detected

Air Sample Volume(L): 14.6
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	86	50-150

eurofins | Air Toxics

Client Sample ID: SSV-01
Lab ID#: 1803012A-11A
EPA METHOD TO-17

File Name:	**6030835**	**Date of Extraction: NA**	**Date of Collection: 2/27/18 7:34:00 AM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 06:19 AM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	2.2	Not Detected	Not Detected

Air Sample Volume(L): 0.450
Container Type: TO-17 VI Tube

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

eurofins | Air Toxics

Client Sample ID: SSV-02

Lab ID#: 1803012A-12A

EPA METHOD TO-17

File Name:	**6030912**	**Date of Extraction: NA**	**Date of Collection: 2/27/18 7:59:00 AM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 05:57 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	2.2	Not Detected	Not Detected

Air Sample Volume(L): 0.450
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	67	50-150

eurofins | Air Toxics

Client Sample ID: SSV-04

Lab ID#: 1803012A-13A

EPA METHOD TO-17

File Name:	**6030913**	**Date of Extraction: NA**	**Date of Collection: 2/27/18 8:20:00 AM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 06:38 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	2.2	Not Detected	Not Detected

Air Sample Volume(L): 0.450
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	85	50-150

eurofins | Air Toxics

Client Sample ID: SSV-05-450

Lab ID#: 1803012A-14A

EPA METHOD TO-17

File Name:	**6031210**	**Date of Extraction: NA**	**Date of Collection: 2/27/18 9:00:00 AM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/12/18 03:48 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	2.2	Not Detected	Not Detected

Air Sample Volume(L): 0.450
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	84	50-150

eurofins | Air Toxics

Client Sample ID: SSV-06-450

Lab ID#: 1803012A-16A

EPA METHOD TO-17

File Name:	**6031211**	**Date of Extraction: NA**	**Date of Collection: 2/27/18 9:00:00 AM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/12/18 04:29 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	2.2	Not Detected	Not Detected

Air Sample Volume(L): 0.450
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	84	50-150

eurofins | Air Toxics

Client Sample ID: SSV-07A

Lab ID#: 1803012A-18A

EPA METHOD TO-17

File Name:	**6030916**	**Date of Extraction: NA**	**Date of Collection: 2/27/18 8:33:00 AM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 08:39 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	2.2	Not Detected	Not Detected

Air Sample Volume(L): 0.450
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	73	50-150

eurofins | Air Toxics

Client Sample ID: SSV-08
Lab ID#: 1803012A-19A
EPA METHOD TO-17

File Name:	**6030917**	**Date of Extraction: NA**	**Date of Collection: 2/27/18 8:00:00 AM**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 09:20 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	2.2	Not Detected	Not Detected

Air Sample Volume(L): 0.450
Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	73	50-150

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1803012A-20A

EPA METHOD TO-17

File Name:	**6030814**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/8/18 01:34 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.068	Not Detected	Not Detected

Air Sample Volume(L): 14.6

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Naphthalene-d8	71	50-150

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1803012A-20B

EPA METHOD TO-17

File Name:	**6030907**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 02:19 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.068	Not Detected	Not Detected

Air Sample Volume(L): 14.6

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Naphthalene-d8	104	50-150

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1803012A-20C

EPA METHOD TO-17

File Name:	**6031207**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/12/18 01:06 PM**

Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
Naphthalene	1.0	0.068	Not Detected	Not Detected

Air Sample Volume(L): 14.6

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Naphthalene-d8	71	50-150

eurofins | Air Toxics

Client Sample ID: CCV
Lab ID#: 1803012A-21A
EPA METHOD TO-17

File Name:	**6030808**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/8/18 08:11 AM**

Compound	%Recovery
Naphthalene	84

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

Surrogates	%Recovery	Method Limits
Naphthalene-d8	81	50-150

eurofins | Air Toxics

Client Sample ID: CCV
Lab ID#: 1803012A-21B
EPA METHOD TO-17

File Name:	**6030902**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 10:27 AM**

Compound	%Recovery
Naphthalene	84

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

Surrogates	%Recovery	Method Limits
Naphthalene-d8	89	50-150

eurofins | Air Toxics

Client Sample ID: CCV
Lab ID#: 1803012A-21C
EPA METHOD TO-17

File Name:	**6031203**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/12/18 10:23 AM**

Compound	%Recovery
Naphthalene	83

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

Surrogates	%Recovery	Method Limits
Naphthalene-d8	79	50-150

eurofins | Air Toxics

Client Sample ID: LCS
Lab ID#: 1803012A-22A
EPA METHOD TO-17

File Name:	**6030809**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/8/18 09:10 AM**

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	89	50-150

eurofins | Air Toxics

Client Sample ID: LCSD
Lab ID#: 1803012A-22AA
EPA METHOD TO-17

File Name:	**6030810**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/8/18 09:50 AM**

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	86	50-150

eurofins | Air Toxics

Client Sample ID: LCS
Lab ID#: 1803012A-22B
EPA METHOD TO-17

File Name:	**6030906**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 01:11 PM**

Compound	%Recovery	Method Limits
Naphthalene	83	70-130

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

Surrogates	%Recovery	Method Limits
Naphthalene-d8	76	50-150

eurofins | Air Toxics

Client Sample ID: LCSD
Lab ID#: 1803012A-22BB
EPA METHOD TO-17

File Name:	**6030904**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/9/18 11:48 AM**

Compound	%Recovery	Method Limits
Naphthalene	69 Q	70-130

Air Sample Volume(L): 1.00
Q = Exceeds Quality Control limits.
Container Type: NA - Not Applicable

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

eurofins | Air Toxics

Client Sample ID: LCS
Lab ID#: 1803012A-22C
EPA METHOD TO-17

File Name:	**6031204**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/12/18 11:04 AM**

Compound	%Recovery	Method Limits
Naphthalene	90	70-130

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

Surrogates	%Recovery	Method Limits
Naphthalene-d8	79	50-150

eurofins | Air Toxics

Client Sample ID: LCSD
Lab ID#: 1803012A-22CC
EPA METHOD TO-17

File Name:	**6031205**	**Date of Extraction: NA**	**Date of Collection: NA**
Dil. Factor:	**1.00**		**Date of Analysis: 3/12/18 11:45 AM**

Compound	%Recovery	Method Limits
Naphthalene	91	70-130

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

Surrogates	%Recovery	Method Limits
Naphthalene-d8	81	50-150

TO-17 SAMPLE COLLECTION

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

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FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Paul McCullough
Collected by: (Print and Sign) Eric Cole
Company: Arcadis Email: eric.cole@arcadis.com
Address: 1100 Olive Way, Ste 800 City: Seattle State: WA Zip: 98101
Phone: 206-726-4904 Fax:

Project Info:
P.O. #: 3EA41774
Project #: 3EA41774.0002
Project Name: PIH Olympia

Turn Around Time: ☒ Normal ☐ Rush

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 (ml/min)	Post-Test Flow Rate (ml/min)	Volume (L)	Indoor/Outdoor % RH	Indoor/Outdoor Temp	Indoor Air	Outdoor Air	Soil Vapor	Other (Field Blank)
	IA-01	G0155233	02/26/18	13:06	20:47	28.80	28.31	13.1	—	72	☒	☐	☐	☐
	IA-02	G0151165	02/26/18	13:00	20:44	24.41	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	72	☒	☐	☐	☐
	IA-04	G0187164	02/26/18	13:16	20:56	24.84	—	13.1	—	72	☒	☐	☐	☐
	IA-05	G0148334	02/26/18	13:20	21:01	24.75	28.34	13.4	—	72	☒	☐	☐	☐
	IA-06	G0148557	02/26/18	13:26	21:06	24.71	20.12	11.5	—	72	☒	☐	☐	☐
	IA-07	G0153014	02/26/18	13:47	21:22	24.65	23.84	12.0	—	72	☒	☐	☐	☐
	IA-08	G0140511	02/26/18	13:11	20:51	28.16	28.74	12.5	—	72	☒	☐	☐	☐
EE	~~CA-01~~	~~G0151834~~	~~02/26/18~~	~~13:12~~	~~20:51~~	~~30.87~~	~~28.11~~	~~3.47~~	~~83~~	~~35~~	☐	☒	☐	☐
	CA-02	G0157124	02/26/18	12:40	20:15	29.31	27.30	12.5	83	35	☐	☒	☐	☐
	Field Blank	A004471	02/26/18	20:20	20:20	—	—	—	—	—	☐	☐	☐	☒

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	2-28-18 / 1700		
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
EPA TO-17 for Naphthalene Only.
Lower Volume for IA-02 ... [illegible]
Do not analyze CA-01

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

REVISED COC 3/5/18

TO-17 SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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Page 2 of 2

Project Manager: Paul McCullough
Collected by: (Print and Sign) Eric Eagle
Company: Arcadis
Email: eric.eagle@arcadis.com
Address: 1100 Olive Way, Ste 800 City: Seattle State: WA Zip: 98101
Phone: 206-714-6404 Fax:

Project Info:
P.O. #: SEA41774
Project #: SEA41774.0002
Project Name: PLH Olympia

Turn Around Time: ☒ Normal ☐ Rush

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
	SSV-01	G0144405	02/27/18	07:34	07:34	—	—	450	—	72	☐	☐	☒	☐
	SSV-02	G0145538	02/27/18	07:59	07:59	—	—	450	—	72	☐	☐	☒	☐
	SSV-04	A00466	02/27/18	08:20	08:20	—	—	450	—	72	☐	☐	☒	☐
	SSV-05-450	G0152593	02/27/18	09:00	09:00	—	—	450	—	72	☐	☐	☒	☐
	* SSV-05-60 *	G0142490	02/27/18	09:02	09:02	—	—	60	—	72	☐	☐	☒	☐
	SSV-06-450	G0134432	02/27/18	09:00	09:00	—	—	450	—	72	☐	☐	☒	☐
	* SSV-06-60 *	G0143871	02/27/18	09:02	09:02	—	—	60	—	72	☐	☐	☒	☐
	SSV-07A	G0148988	02/27/18	~~08:30~~	08:53	—	—	450	—	72	☐	☐	☒	☐
	SSV-08	G0147223	02/27/18	08:00	08:00	—	—	450	—	72	☐	☐	☒	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	2-28-18 / 1700		
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
USEPA TO-17 analyzed for Naphthalene only.
* - SSV-05-60 and SSV-06-60 submitted on hold pending ~~re~~ sample ~~[illegible]~~ [illegible]

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

REVISED COC 3/5/18

TO-17 SAMPLE COLLECTION

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Page 1 of 2

Project Manager: Paul McCullough
Collected by: (Print and Sign) Eric Eple
Company: Arcadis Email: eric.eple@arcadis.com
Address: 1100 Olive Way, Ste 800 City: Seattle State: WA Zip: 98101
Phone: 206-794-6904 Fax:

Project Info:
P.O. # SEA41774
Project # SEA41774.0002
Project Name: PTH Olympia

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 (ml/min)	Post-Test Flow Rate (ml/min)	Volume (L)	Indoor/Outdoor % RH	Indoor/Outdoor Temp	Indoor Air	Outdoor Air	Soil Vapor	Other (Field Blank)
01A	IA-01	G0155283	02/26/18	13:06	20:47	28.80	28.31	13.1	—	72	☒	☐	☐	☐
02A	IA-02	G0151165	02/26/18	13:06	20:44	29.41	~~32.57~~ 32.26	[illegible]	[illegible]	72	☒	☐	☐	☐
03A	IA-04	G0157154	02/26/18	13:16	20:56	29.84	—	13.1	—	72	☒	☐	☐	☐
04A	IA-05	G0148334	02/26/18	13:20	21:01	29.75	28.34	13.4	—	72	☒	☐	☐	☐
05A	IA-06	G0148357	02/26/18	13:26	21:06	29.71	30.17	13.5	—	72	☒	☐	☐	☐
06A	IA-07	G0153014	02/26/18	13:47	21:23	29.65	23.89	12.0	—	72	☒	☐	☐	☐
07A	IA-08	G0145511	02/26/18	13:11	20:51	29.16	29.74	15.5	—	72	☒	☐	☐	☐
08A	OA-01	G0151834	02/26/18	13:12	20:31	30.87	35.11	3.97	83	35	☐	☒	☐	☐
09A	OA-02	G0157124	02/26/18	12:50	20:15	29.31	27.00	12.5	83	35	☐	☒	☐	☐
10A	Field Blank	A004171	02/26/18	20:20	20:20	—	—	—	—	—	☐	☐	☐	☒

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	Notes:
[signature] 2-28-18 / 1700	Andrea Augustin EATL 3/1/18 1100	EPA TO-17 for Naphthalene Only. Sample Volume for IA-02 is 14.6 L.
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		-2.8 °C	Good	Yes No (None)	1803012

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.

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Project Manager: Paul McCullough
Collected by: (Print and Sign) Eric Cole
Company: Arcadis Email: eric.cole@arcadis.com
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Project Info:
P.O. #: SEA41774
Project #: SEA41774.0002
Project Name: PLH Olympia

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 ( )
11A	SSV-01	G0144403	02/27/18	07:34	07:34	—	—	450	—	72	☐	☐	☒	☐
12A	SSV-02	G0145555	02/27/18	07:59	07:59	—	—	450	—	72	☐	☐	☒	☐
13A	SSV-09	A004466	02/27/18	08:20	08:20	—	—	450	—	72	☐	☐	☒	☐
14A	SSV-05-450	G0152583	02/27/18	09:00	09:00	—	—	450	—	72	☐	☐	☒	☐
m 3/1/18 15A	* SSV-05-60 *	G0152290	02/27/18	09:02	09:02	—	—	60	—	72	☐	☐	☒	☐
16A	SSV-06-450	G0139482	02/27/18	09:00	09:00	—	—	450	—	72	☐	☐	☒	☐
m 3/1/18 17A	* SSV-06-60 *	G0143671	02/27/18	09:02	09:02	—	—	60	—	72	☐	☐	☒	☐
18A	SSV-07A	G0148488	02/27/18	~~08:53~~	08:53	—	—	450	—	72	☐	☐	☒	☐
19A	SSV-08	G0149222	02/27/18	08:00	08:00	—	—	450	—	72	☐	☐	☒	☐
											☐	☐	☐	☐

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
[signature] 2-28-18 / 1700	Andrea Augusta EATL 3/1/18 1100
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time

Notes:
USEPA TO-17 analyzed for Naphthalene only.
* - SSV-05-60 and SSV-06-60 submitted on hold pending 450 mL sample screening

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		-2.0	Good	Yes No (None)	1803012