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Vapor Intrusion Study Report
Former Frank Wear Cleaners Site

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Prepared for

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Section 1: Introduction

The Former Frank Wear Cleaners (Site) was historically the site of a dry cleaner that operated from the early 1940s to 2000. During many of these years, the dry cleaners used tetrachloroethene (PCE) as its dry cleaning solvent. As a result of the dry cleaning operations, PCE has been subsequently detected in the soil and groundwater at and adjacent to the Site. PCE was also observed in the soil vapor at the Site, during soil vapor survey conducted in 1995.

A building is located adjacent to the Site that is currently operated as a childcare center (Buckle My Shoe Early Learning Center). Given the elevated groundwater and historic soil vapor concentrations at the Site, the Washington State Department of Ecology (Ecology) requested a vapor intrusion study be conducted at the childcare center. The goal of the study is to evaluate whether vapor intrusion is occurring at the childcare center.

A summary of the overall Site conditions, including a discussion of geology and hydrogeology and a review of previous environmental investigations at the Site, is provided in Ecology's *Vapor Intrusion Study Scope of Work – Frank Wear Site* (SOW) dated August 2011. The location of the former Frank Wear Cleaners, the Buckle My Shoe Learning Center, and a view of the site vicinity is presented in Figure 1.

1.1 Technical Review of Existing Data

Historical groundwater and soil vapor data were reviewed as additional lines of evidence for the vapor intrusion study at the childcare center. A discussion of the review is included below.

The Site is located in a commercial land use area, with several commercial structures located to the south and west of the Site (see Figures 2 and 3). In April 2007, 14 groundwater wells associated with the Site were monitored and sampled. Groundwater flow direction was reported to be towards the south and southeast, and maximum site-wide PCE concentrations were measured in wells MW-10 (9,200 micrograms per liter [µg/L]) and SPW-15 (200 µ/L). These two wells, MW-10 and SPW-15, are located northwest (hydraulically upgradient) of the existing childcare center building. Excel files provided by Ecology revealed groundwater in wells MW-10 and SPW-15 was encountered at 15 to 20 feet below ground surface (Ecology 2011b). Maximum PCE concentrations at the site were reported in well MW-10, ranging from 6,900 µg/L to 43,500 µg/L, with increasing concentrations from 2005 to 2007. PCE was also detected in well SPW-15, ranging from 327 µg/L to 3,190 µg/L, during the same time period.

Resource protection well reports prepared by Cascade Drilling for monitoring wells MW-6 through MW-10 (installed at the Site in 2005) revealed soil types observed during well installation activities were sandy gravels and cobbles from ground surface to 35 feet below ground surface (Cascade 2005). Generally, sandy soils allow for the most movement of off gassing vapor-phase PCE from the groundwater through the vadose zone.

In June 2011, shallow-zone and deep-zone groundwater wells associated with the nearby regional Yakima railroad area (YRRA) investigation were sampled. A total of 15 deep-screened wells and 44 shallow-screened wells were monitored. Groundwater flow direction in the region was reported to be towards the southeast. Historical concentrations of chlorinated solvents,

such as PCE, trichloroethylene (TCE), 1,1-dichloroethene, cis- and trans-1,2-dichloroethene, and vinyl chloride were presented in the memorandum prepared by Kane Environmental in July 2011. Concentrations of PCE in shallow groundwater ranged from less than 1 µg/L to an average of 82 µg/L. Deep groundwater PCE concentrations ranged from less than 1 µg/L to 30 µg/L.

Historical soil vapor data for the Site was also reviewed as part of this vapor intrusion study. A soil vapor survey was conducted at the Site by AGRA Earth and Environmental, Inc., in January 1995. Soil vapor samples were collected from 25 locations in and around the Site building. Soil vapor samples were collected from approximately 3.5 feet below the building slab and from approximately 4 to 7 feet below ground surface at exterior locations. PCE was detected in all 25 locations at concentrations ranging from 7 to 712 µg/L air. The analytical reports only reported PCE for these soil vapor samples. At the time, the lateral extent of vapor-phase PCE was limited to the north-central property boundary of the Site building.

Since the analytical method (gas chromatography [GC]) used to analyze these soil vapor samples has been improved, and samples are typically analyzed for a broad range of chemicals, the soil vapor data collected in 1995 is presented here for qualitative discussion only. Furthermore, the methods and techniques for collecting soil vapor samples have advanced since the 1995 investigation was performed. Soil vapor data from 1995 may not be representative of current conditions of vadose zone soil vapor at the Site.

Existing data from the Site indicates that groundwater and soil have been impacted by PCE from the dry cleaning operations at the Site. The PCE-impacted groundwater appears to extend below the adjacent childcare center, providing the potential for vapor intrusion at this building.

1.2 Regulatory Framework

In accordance with Ecology's Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State (Draft Guidance), when the source is groundwater, the first step to evaluate vapor intrusion is to compare the groundwater data to the screening levels published in Table B-1 of the guidance document. The groundwater Method B screening level for PCE is 1 µg/L, so measured groundwater concentrations at the Site are significantly above screening levels.

The next step is to use the groundwater data with the Johnson and Ettinger Model (JEM) to predict indoor air concentrations (EPA 2004). The predicted indoor air concentrations in the childcare center are also compared to Table B-1 to evaluate if an unacceptable exposure may exist and to evaluate whether a Tier II evaluation is warranted. The JEM model was run to predict indoor air concentrations based on the maximum groundwater PCE concentration of 43,500 µg/L. The predicted indoor air concentration is 9,080 micrograms per cubic meter (µg/m^3). This is significantly greater than the Model Toxics Control Act (MTCA) Method B air cleanup level of 0.42 µg/m^3 for PCE. A discussion about the assumptions used, and the model input and results are included in Attachment B of the Technical Memorandum prepared by Kennedy/Jenks Consultants and submitted to Ecology on 20 September 2011.

Following the Draft Guidance, additional data collection was recommended to complete a Tier II evaluation. A summary of the investigation activities conducted for the Tier II assessment is provided in the following sections.

Section 2: Vapor Intrusion Study – Tier II Evaluation

As discussed above, Tier II assessment was recommended as the next step for assessment of vapor intrusion at the childcare center related to the adjacent Site. This included indoor air, outdoor ambient air, and subslab soil vapor sampling. Results of the investigation are evaluated to determine whether subslab and indoor air concentrations pose an immediate concern and/or a potential long term exposure risk to the occupants in the structure. The Tier II investigation activities are discussed in the following sections.

2.1 Investigation Activities

Before conducting sampling activities, Kennedy/Jenks Consultants interviewed the occupants of the childcare center about activities and products used and stored in the structure. A questionnaire was completed to inventory any items that may influence air quality. The types of products used at the facility were discussed with the occupant. Building construction details were noted. The majority of the floor is covered with either carpeting or linoleum. Very little of the floor area is visible to evaluate whether or not there may be cracks in the floor slab. The potential complications to indoor air samples from products stored or used in the building were discussed with the occupant, and it was revealed that an upstairs storage room currently contained a moderate amount of paints, adhesives, stains, and other similar products. It was suggested to the occupant that it would be desirable to remove these products completely from the building before the sampling took place. Additionally, the occupant was asked to inform employees not to wear any clothes that had been dry cleaned or use of any strong products, such as nail polish in the days before the sampling began. At the time of sampling, the occupant notified Kennedy Jenks Consultants personnel that the materials in the storage room were removed from the building approximately 3 days prior. The completed Occupied Dwelling Questionnaire is provided in Appendix A.

Field activities described herein were performed in a manner consistent with the standard operating guidelines (SOGs) and standard operating procedures (SOPs) presented in the Attachment C of the *Task 1 Technical Memorandum, Frank Wear Vapor Intrusion Study, Yakima, Washington*, prepared by Kennedy/Jenks Consultants and submitted to Ecology on 20 September 2011.

Photographs and the following field forms associated with the sampling events are provided in Appendix A:

- Occupied Dwelling Questionnaires
- Indoor soil vapor sampling logs
- Subslab and soil vapor survey log sheets
- Indoor air sampling logs
- Ambient air sampling logs.

2.1.1 Utility Location

Prior to invasive activities, a utility survey was performed to evaluate the potential for underground utilities at each proposed subslab sampling location. The utility survey was used to augment existing information provided by the property owner and Ecology.

The utility survey was performed by Applied Professional Services, Inc. (APS) of North Bend, Washington. Results of the utility survey indicated a water line located approximately 18 inches beneath the concrete slab. The waterline extends laterally through the subsurface from beneath the main floor sink in the children's nap/play area toward the east into South 3rd Avenue.

2.1.2 Indoor Air and Outdoor Ambient Air Sampling

On 24 September 2011, four 24-hour indoor air samples were collected in three areas on the main floor and one area on the second floor of the daycare center. Additionally, two 24-hour ambient air samples were collected outside, upwind of the building, during the time period the indoor air sample was collected.

Indoor air and ambient air sampling locations are shown on Figures 2 and 3.

Prior to sampling activities, the occupants of the childcare center were requested not to use common consumer products that may impact the indoor air. Construction and renovation materials stored in the upstairs storage room were removed several days prior to sampling, so as not to contribute to indoor air volatile organic compounds (VOCs) concentrations. All windows and doors were shut, use of fans was suspended, and the heating, ventilating, and air conditioning (HVAC) system was turned off during indoor air sampling to simulate the worst-case scenario.

Indoor air samples were collected using individually certified Summa™ canisters with laboratory cleaned 24-hour flow controllers. Before indoor air sample collection, the canister's valve was confirmed to be closed, the canister's brass cap was removed, and a flow controller and gauge were attached to the canister. The initial vacuum of the canister was recorded by attaching the brass cap to the gauge inlet, opening and closing the valve quickly, recording the gauge reading, then removing the brass cap. These steps were also used to verify the final vacuum of the canister after sampling.

Indoor air sample collection was initiated by opening the Summa™ canister's valve. During sample collection at two of the four locations, sample canisters and associated air intakes were placed approximately 3 to 5 feet above the floor level; one location on the main floor atop the desk in the reception area and one on the second floor atop a table in the dining area. To collect representative samples of the breathing air for children while napping, the remaining two indoor air samples were collected from the floor level in the play areas at the northeastern corner and southeastern corner of the building. At the end of the 24-hour period, the final vacuum was recorded, the canister's valve was closed, the flow controller and gauge were removed, and the brass cap was replaced on the canister inlet.

Ambient outdoor air samples were collected at two locations on the days indoor air samples were collected; one from an approximate upwind location and one along the northern wall of the building in the vicinity of monitoring well MW-10. Ambient air samples were collected using individually certified Summa™ canisters with laboratory cleaned 24-hour flow controllers. Canisters were secured at locations inside the fenced area immediately west of the existing building. Teflon tubing (1/4-inch) was then secured to the inlet on the flow controller using a ferrule and Swagelok fitting, and the tubing was extended upward to the breathing zone in the upwind location and extended along the northern wall approximately 10 feet from the fence and 3 feet above ground surface.

Ambient locations were selected based on prevailing wind direction (from the west) for the Yakima Valley and wind direction observed at the site during the field investigation.

A description of the locations of the Summa™ canisters in the structures are provided on the completed Field Indoor Air Sampling Logs provided in Appendix A. The locations are also shown on the sketch included on the Field Indoor Soil Gas Sampling Logs provided in Appendix A.

A second round of indoor air samples was collected on 20 October 2011. Indoor air samples were collected using individually certified Summa™ canisters with laboratory cleaned 12-hour flow controllers. The canisters were prepared in the same manner as during the first sampling event. A total of four samples was collected at the same locations as during the first sampling event with the following exception: The two samples collected in the nap/play areas were moved slightly to keep out of the way of the children. In the southern nap/play area, the canister was placed on top of a small table with the intake approximately 3 feet above the floor. In the northern nap/play area, the canister was placed on top of a shelf along the northern wall, approximately 6 feet above the floor area. These locations were discussed with and approved by Ecology.

Sampling conditions were chosen to be as close to actual conditions as practicable. Samples were collected during a 12-hour period on a normal operating day (12hours being the most appropriate sampling period flow controller available from the laboratory), with the HVAC system operating as typical, and people entering and exiting the building as typical. The questionnaire used during the first sampling event was reviewed and verified with the occupant during the second sampling event. A miscommunication with the occupants resulted in windows being opened in the building for approximately 12 to 4 hours prior to the sampling period. These were closed before sampling commenced.

2.1.3 Subslab Soil Vapor Sampling

On 25 September 2011, three subslab soil vapor samples were collected from beneath the concrete slab of the childcare center. Subslab sample locations were selected based on proximity to the Site and in areas resulting in the least damage to the existing floor coverings.

Subslab soil vapor samples were collected in accordance with procedures outlined in Attachment C of the Task 1 Technical Memorandum submitted to Ecology on 20 September 2011. Holes were drilled through the floor slab and a temporary subslab probe was installed at each location. The sampling trains were tested for leaks by conducting a shut-in test, which consisted of applying a vacuum on the sampling train and observing if vacuum loss occurred over a period of 60 seconds. The subslab implants were tested for leaks by placing a shroud over the subslab implant. Helium was introduced into the shroud and concentrations were maintained at approximately 50 to 60 percent while purging and sampling each subslab sampling location. The dead-volume of the connecting tubing and sampling train was purged by removing 200 milliliters of air from the probe. The purge air was immediately tested using a portable helium meter to evaluate the probe for potential leaks. Subslab soil vapor samples were then collected using individually certified 6-liter Summa™ canisters. Holes were sealed upon completion of the sampling with neat cement, and the surface cover was restored to its original condition.

Copies of the completed Field Indoor Soil Gas Sampling Logs are provided in Appendix A. Subslab sampling locations are shown on the logs and are presented on Figure 2.

2.1.4 Sample Analysis

Ambient and indoor air samples were analyzed for VOCs using EPA Method TO-15 (EPA 1999) with selected compounds analyzed in selective ion monitoring (SIM) mode, by Air Toxics, LTD. (ATL) of Folsom, California.

Subslab and soil vapor samples were analyzed for VOCs using EPA Method TO-15 and for helium by ASTM International (ASTM) Method 1945-46, by H&P Mobile Geochemistry, Inc. (H&P) of Carlsbad, California.

Ambient and indoor air sample analytical results are presented in Table 1, and soil vapor analytical results are summarized in Table 2. Copies of the laboratory analytical reports and chain-of-custody documentation are provided in Appendix B.

Section 3: Quality Assurance/Quality Control (QA/QC)

Summa™ canisters and flow controllers used for sampling were pre-cleaned and certified by the analytical laboratory to the reporting limits for the appropriate compounds and analyses used during the investigation (e.g., EPA Method TO-15 or EPA Method TO-15 SIM). Vacuum gauges were equilibrated in the field, and initial vacuum of the canisters checked to assure that each canister had the minimum vacuum required for use.

A duplicate indoor air sample was proposed in the Technical Memorandum, to evaluate analytical precision. However, based on discussions with Ecology during the field investigation, a duplicate indoor air sample was not collected. In lieu of collecting a duplicate indoor air sample, an additional primary sample (BMS-M3-092411) was collected from just above the floor in the play area at the southeastern corner of the building.

Laboratory reporting limits for the following chemicals did not meet the draft Method B subslab soil vapor or indoor air Method B cleanup levels: TCE, 1,2-dichloroethane, and 1,1,1,2-tetrachlorethane. For indoor air analysis, 1,2-dichloroethane was analyzed using SIM analysis, so the lowest reporting limits possible by the laboratory is achieved. 1,1,1,2-tetrachloroethane is not a standard chemical on the laboratory's indoor air TO-15 analyte list and, therefore, could not be analyzed at the lower reporting limit than provided by the laboratory. TCE was analyzed using SIM analysis by the laboratory, which ultimately did not provide a low enough reporting limit after dilution (required for removal of the sample from the canister). During the second indoor air sampling event, the laboratory was asked to provide an ultra-low reporting limit for TCE. Ultra-low reporting is only available for this chemical.

No significant leaks were observed during subslab soil vapor sample collection in the field. Analysis for the leak check compound (helium) at the laboratory confirmed the results of field screening using the portable helium meter.

Section 4: Results &Recommendations

Ecology's SOW, dated August 2011, identified ten chemicals of interest (COIs) in soil and groundwater at the Site. For the purposes of this study, these COIs were used as the basis of evaluation for the potential of vapor intrusion at the childcare center.

This list includes the following ten chemicals:

- PCE
- TCE
- cis-1,2-dichloroethene
- trans-1,2-dichloroethene
- Chloroform
- Chlorobenzene
- 1,2-dichlorobenzene
- 1,2-dichloroethane
- 1,1,1-trichloroethane
- 1,1,1,2-tetrachloroethane.

Analytical results for subslab soil vapor samples are presented in Table 1 and results for 24-hour ambient and indoor air samples are presented in Table 2. Tables summarize only the COIs listed above.

Analytical results for the two ambient air samples showed no detections of COIs above the laboratory reporting limits.

4.1 Indoor/Ambient Air Sample Results

During the first sampling event on 24 September 2011, four of the COIs were detected in the indoor air samples above cleanup levels. These were PCE (four of four samples), chloroform (four of four samples), 1,2-dichloroethane (two of four samples), and TCE (one of four samples). None of the COIs were detected in the two ambient air samples collected during the same 24-hour period.

The indoor air PCE concentrations ranged from 5.7 to 6.6 $\mu g/m^3$, above the generic indoor air cleanup level of 0.42 $\mu g/m^3$.PCE was not detected in the ambient air samples. Studies of background indoor air concentrations of VOCs have shown median concentrations of PCE ranging from 0.15 to 15$\mu g/m^3$(Kline and Goers, 2009).

Chloroform was detected at concentrations ranging from 1.3 to1.4 µg/m^3.Studies of background indoor air concentrations of VOCs have shown median concentrations of chloroform ranging from 0.19 to 3.37µg/m^3(Kline and Goers, 2009). Indoor air sources of chloroform include chlorinated drinking water and use of common household cleaning products, such as bleach. The childcare center is connected to the City of Yakima (city) water system, which chlorinates its water. During the sampling period, bottles of bleach were observed in the building. The concentrations of chloroform detected in the building may be related to the use of city water.

There were two detections of 1,2-dichloroethane at 0.15 µg/m^3 above the cleanup level of 0.096 µg/m^3. The remaining two samples were not detected; however, the reporting limit was above the cleanup level. The laboratory analyzed all samples for 1,2-dichloroethane using SIM analysis; therefore, the lowest reporting limits possible were reported. In the past, 1,2-dichloroethane has been used in some adhesives for gluing carpeting, and emissions have been measured from molded plastic decorations (Utah Department of Health, 2009; ATSDR, 2001).

There was one detection of TCE at 0.27 µg/m^3, which is above the cleanup level of 0.1 µg/m^3. The reporting limits for the samples without detections of TCE ranged from 0.18 to 0.27 µg/m^3.

Analytical results from the second sampling event on 20 October 2011 showed detections of three of the COIs. These were PCE (four of four samples), chloroform (four of four samples), 1,2-dichloroethane (two of four 4 samples), and TCE (four of four samples). The indoor air PCE concentrations ranged from 6.0 to 6.5 µg/m^3, again above the indoor air cleanup level of 0.42 µg/m^3. Chloroform was detected at concentrations ranging from 2.3 to 2.9 µg/m^3. The four detections of TCE ranged from 0.080 to 0.086 µg/m^3, below the air cleanup level of 0.1µg/m^3.

4.2 Subslab Soil Gas Sample Results

Two of the COIs were detected in the three soil vapor samples collected from below the floor of the building.

PCE was detected in subslab soil vapor at concentrations ranging from 3,600 to 50,000 µg/m^3, significantly greater than the draft Method B screening level for subslab soil vapor of 4.2 µg/m^3.

Chloroform was detected in the soil vapor at concentrations ranging from 7.5 to 27 µg/m^3. At these concentrations, chloroform is above the draft subslab soil vapor screening level of 1.1 µg/m^3. Concentrations of chloroform in the subslab soil vapor are potentially attributable to chlorinated drinking water from the public water supply. During the utility locate conducted prior to sampling, a clay water pipe was identified beneath the slab of the daycare center.

There were no detections of 1,2-dichloroethane or TCE in the three soil vapor samples. However, laboratory reporting limits were above the screening levels for these chemicals.

4.3 Discussion of Results

4.3.1 25 September 2011 Indoor Air Sampling

The elevated concentrations of PCE in the soil vapor and the presence of PCE in the indoor air suggest vapor intrusion is likely occurring at the building for this chemical. To help evaluate whether the other chemicals detected in the indoor air are related to vapor intrusion, the most conservative ratio of PCE (6.6/3,600, or 0.002) was compared to the indoor air concentrations of the other detected chemicals, or to chemicals that were not detected, but whose reporting limits were above air cleanup levels (for these, a detection equal to the air cleanup level was assumed). Comparison of these ratios helps to evaluate whether the detections in indoor air are related to vapor intrusion, or suggestive of an indoor source. (ITRC, 2007; Ecology 2009). Using this ratio, expected soil vapor concentrations to produce indoor air concentrations similar to those measured were calculated and are presented in the following table. The calculated subslab soil gas concentrations are higher than those seen in the subslab soil gas. Therefore, this evaluation suggests that of the COIs detected in the building, only PCE, is expected to be present due to vapor intrusion.

Chemical	Indoor Air Concentration ($\mu g/m^3$)	Calculated Subslab Soil Gas Concentration ($\mu g/m^3$)
Chloroform	1.4	764
1,2-dichloroethene	0.15	82
TCE (highest detection)	0.27	147
TCE, if at screening level	0.1	55
1,1,1,2-tetrachloroethane, if at screening level	0.34	185

In order to evaluate a child's exposure to PCE concentrations in indoor air, Kennedy/Jenks Consultants developed a site-specific cleanup level for indoor air to be used in the evaluation of the vapor intrusion pathway. The cleanup level for PCE was calculated for non-carcinogenic and carcinogenic effects for adult and child exposures using the air equations and exposure assumptions from Ecology's *Workbook Tools for Calculating Soil and Groundwater Cleanup Levels under the Model Toxics Control Act Cleanup Regulation, Users Guide*, Revised December 2007. Toxicity values for reference concentration (RfC) and inhalation unit risk (IUR) were obtained using EPA's toxicity value hierarchy (EPA 2003). These values were then converted to inhalation reference dose (RfD_i) and inhalation cancer slope factor (CSF_i) using formulas provided in Ecology's memorandum for *Updating Indoor Air Screening Levels in Appendix B of the Vapor Intrusion Guidance Document*, dated 13 May 2010.

Initially, draft Method B cleanup levels protective of all receptors (adults and children) were calculated based on a hazard quotient of 1 and target cancer risk of 1×10^{-6}. To develop the PCE cleanup level, the initial air cleanup level calculations were adjusted to account for an average child's body weight of 16 kilograms (kg) (EPA 1991), a child's exposure time of 6 years (site-specific), and an average child's breathing rate of 10 cubic meters (m^3)per day (EPA 1997). The resulting concentration for carcinogenic effects is more conservative than non-carcinogenic effects. Using adjusted exposure parameters for the child, the corresponding indoor air cleanup level for PCE for carcinogenic effects is 0.97 $\mu g/m^3$. PCE detections in indoor air ranging from 5.7 to 6.6 $\mu g/m^3$are above both the MTCA Method B cleanup level and the calculated cleanup level.

PCE concentrations detected in subslab soil vapor and indoor air exceed the draft Method B screening levels of 4.2 $\mu g/m^3$ by several orders of magnitude. Indoor air sampling was completed over a 24-hour period, on a weekend day, with no occupants in the building, under a worst case scenario. The measured PCE concentration and corresponding exposure to the occupants of the daycare center is conservative and may overestimate the actual exposure.

4.3.2 20 October 2011 Indoor Air Sampling

The analytical results for these samples are included in Table 2. Concentrations of PCE were similar to those measured during the first sampling event. Actual conditions for occupants of the daycare center are generally a 9-hour exposure time during the weekdays when the building is ventilated using ceiling fans, the HVAC system is running, and air exchanges occur from people entering and exiting the building several times a day. The samples were collected during similar conditions, with the exception that they were collected over a 12-hour time period. Concentrations of chloroform were slightly higher than those measured during the first sampling event and may be due to the use of water during the day. Occupants reported that bleach is used daily for cleaning surfaces on the main floor, and this may also contribute small concentrations of chloroform.

4.4 Recommendations

Using the decision matrix provided by Ecology in Appendix E of the Draft Guidance (Ecology 2009), when indoor air concentrations are greater than 10 times the screening level, and subslab soil vapor concentrations are greater than 10 times the screening level, then mitigation is warranted. The measured PCE indoor air and subslab soil gas concentrations meet these criteria. A mitigation system [e.g., subslab depressurization, soil vapor extraction (SVE) system] installed at the Site is expected to create a negative subslab pressure and limit the migration of vapor-phase PCE through the building slab and into the indoor air. Kennedy/Jenks Consultants recommends an SVE system be installed at this location, as it would serve two purposes: 1) to serve as a mitigation system for PCE migrating through the concrete slab of the daycare facility and 2) to assist with removal of existing PCE mass in the vadose zone and water table fluctuation zone.

Installation of a mitigation system would not address potential indoor sources (if any exist)that may be contributing to indoor air detections. If mitigation does not reduce indoor PCE concentrations to levels below MTCA Method B cleanup values, then additional indoor assessment may be warranted. This additional assessment (if needed) would focus on the presence and location of consumer products contributing to VOC concentrations in indoor air.

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Tables

Table 1: Subslab Soil Gas Analytical Data

Compounds	*MTCA Method B Subslab Soil Gas Screening Level* [(a)]	BMS-SS-1-092511 NE Corner Nap/Play Area 09/25/2011	BMS-SS-2-092511 Main Floor Sink Area 09/25/2011	BMS-SS-3-092511 Reception Area 09/25/2011
Helium[(b)] (%)		<1.0	<1.0	<1.0
Tetrachloroethene	***4.2***	**3,600**	**45,000**	**50,000**
Chloroform	***1.1***	**7.5**	**27**	**16**
trans-1,3-Dichloropropene	***NA***	<4.6	<4.6	<4.6
Chlorobenzene	***80***	<4.7	<4.7	<4.7
1,2-Dichlorobenzene	***640***	<12	<12	<12
1,1,1,2-Tetrachloroethane	***3.4***	<7.0	<7.0	<7.0
cis-1,2-Dichloroethene	***160***	<4.0	<4.0	<4.0
1,1,1-Trichloroethane	***48,000***	<5.5	<5.5	<5.5
1,2-Dichloroethane	***0.96***	<4.1	<4.1	<4.1
Trichloroethene	***1***	<5.5	<5.5	<5.5

Notes:

(a) Screening levels published in Table B-1 of Ecology's *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action;* Review Draft, October 2009.

(b) Helium was used as a leak check compound during soil gas sampling. Results are presented in units of percent.

All units are in micrograms per cubic meter ($\mu g/m^3$), unless otherwise noted.

Detected concentrations are shown in **boldface.**

Table 2: Indoor and Ambient Air Analytical Data

Compounds	MTCA Method B Indoor Air Cleanup Level[a]	BMS-U1-092411	BMS-U1-102011	BMS-M1-092411	BMS-M1-102011	BMS-M2-092411	BMS-M2-102011	BMS-M3-092411	BMS-M3-102011	AMB-UPWIND-092411	AMB-NWALL-092411
		Upstairs (Kitchen)		NE Corner Nap/Play Area		Reception Desk		S Corner Nap/Play Area		Upwind Ambient Air	Upwind Ambient Air along North Wall
		09/25/2011	10/20/2011	09/25/2011	10/20/2011	09/25/2011	10/20/2011	09/25/2011	10/20/2011	09/25/2011	09/25/2011
Tetrachloroethene	*0.42*	**5.7**	**6.1**	**6.3**	**6.0**	**6.2**	**6.2**	**6.6**	**6.5**	<0.23	<0.25
Chloroform	*0.11*	**1.3**	**2.9**	**1.4**	**2.3**	**1.3**	**2.4**	**1.3**	**2.7**	<0.84	<0.90
trans-1,3-Dichloropropene	*NA*	<0.95	<0.77	<0.80	<0.81	<0.81	<0.82	<0.75	<0.78	<0.78	<0.84
Chlorobenzene	*8*	<0.96	<0.78	<0.81	<0.82	<0.82	<0.83	<0.76	<0.80	<0.79	<0.85
1,2-Dichlorobenzene	*64*	<1.2	<1.0	<1.0	<1.1	<1.1	<1.1	<0.99	<1.0	<1.0	<1.1
1,1,1,2-Tetrachloroethane[b]	*0.34*	<7.2	<5.8	<6.0	<6.1	<6.1	<6.2	<5.7	<5.9	<5.9	<6.3
cis-1,2-Dichloroethene	*16*	<0.16	<0.13	<0.14	<0.14	<0.14	<0.14	<0.13	<0.14	<0.14	<0.14
1,1,1-Trichloroethane	*4,800*	<0.23	<0.18	<0.19	<0.19	<0.20	<0.20	<0.18	<0.19	<0.19	<0.20
1,2-Dichloroethane	*0.096*	<0.17	<0.14	**0.15**	<0.14	<0.14	<0.15	**0.15**	<0.14	<0.14	<0.15
Trichloroethene	*0.1*	<0.22	**0.086**	<0.19	**0.080**	**0.27**	**0.083**	<0.18	**0.085**	<0.18	<0.20

Notes:

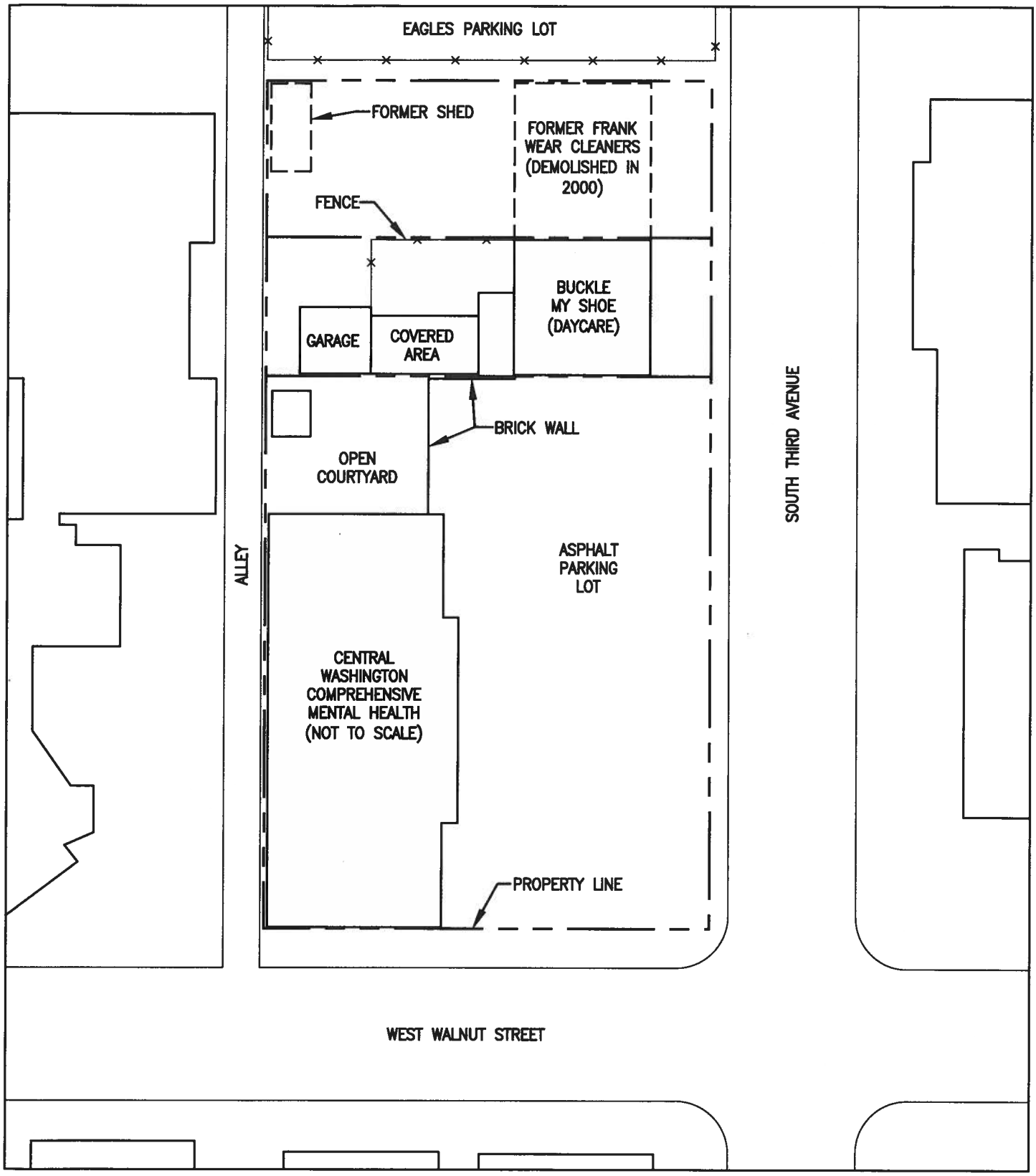
(a) Cleanup levels published in Table B-1 of Ecology's *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action;* Review Draft, October 2009.

(b) 1,1,1,2-Tetrachloroethane is not on the standard TO-15 list for the laboratory; therefore, it could not be analyzed at a low level reporting limit.

All units are in micrograms per cubic meter ($\mu g/m^3$), unless otherwise noted.

Detected concentrations are shown in **boldface.**

Figures



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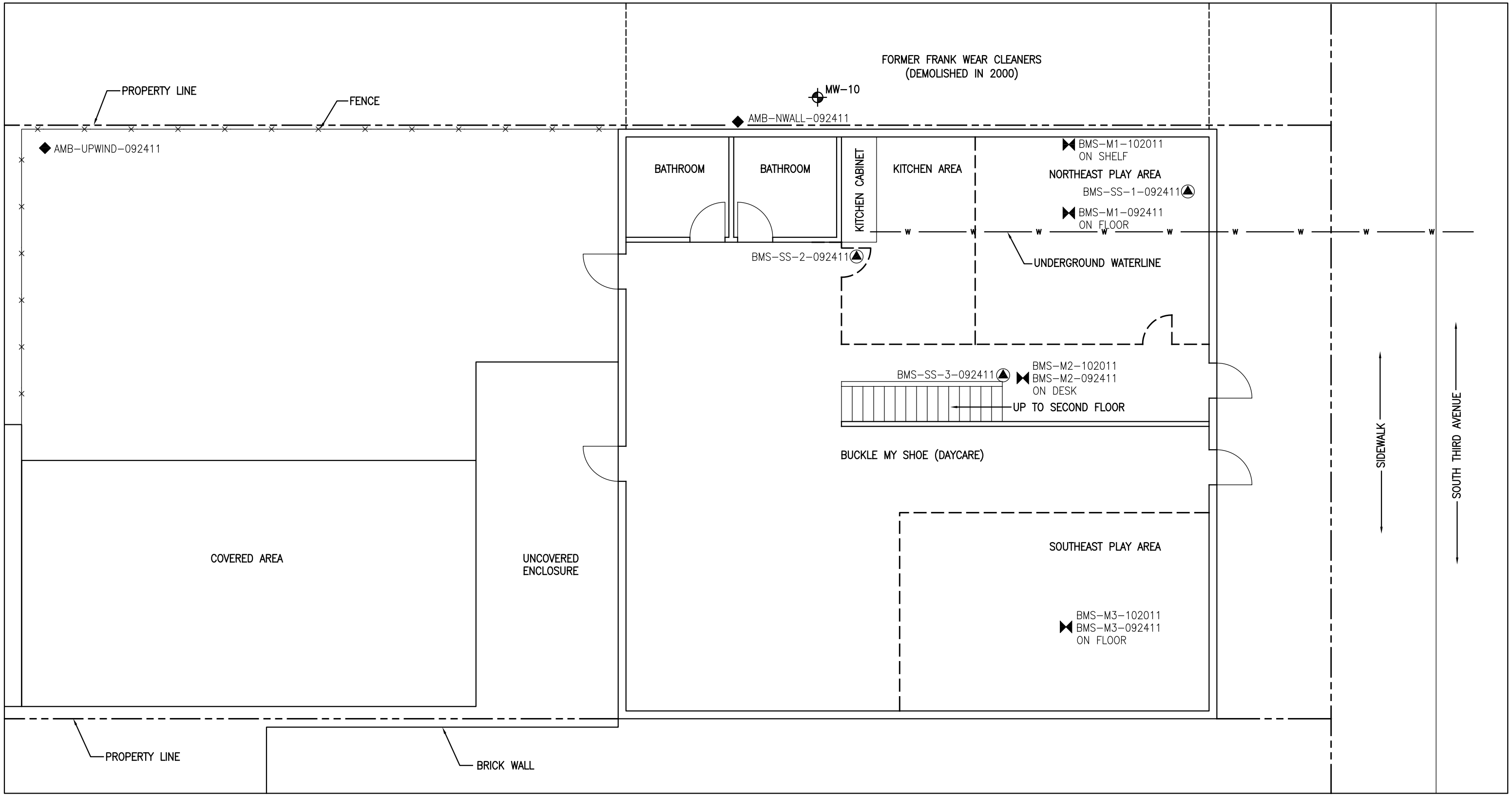
WASHINGTON DEPARTMENT OF ECOLOGY
FRANK WEAR SITE
YAKIMA, WASHINGTON

SITE MAP

119016.00\FIG-01

10/11

FIGURE 1



LEGEND

BMS-SS-1-092411 ▲ SUB-SLAB SOIL GAS LOCATION

BMS-M1-092411 ON FLOOR ⋈ 24-HR INDOOR AIR LOCATION

AMB-UPWIND-092411 ◆ 24-HR AMBIENT AIR LOCATION

MW-10 ⊕ MONITORING WELL

NOTE: ALL LOCATIONS ARE APPROXIMATE

N

0 5 10

APPROXIMATE SCALE 1/8"=1'

Kennedy/Jenks Consultants

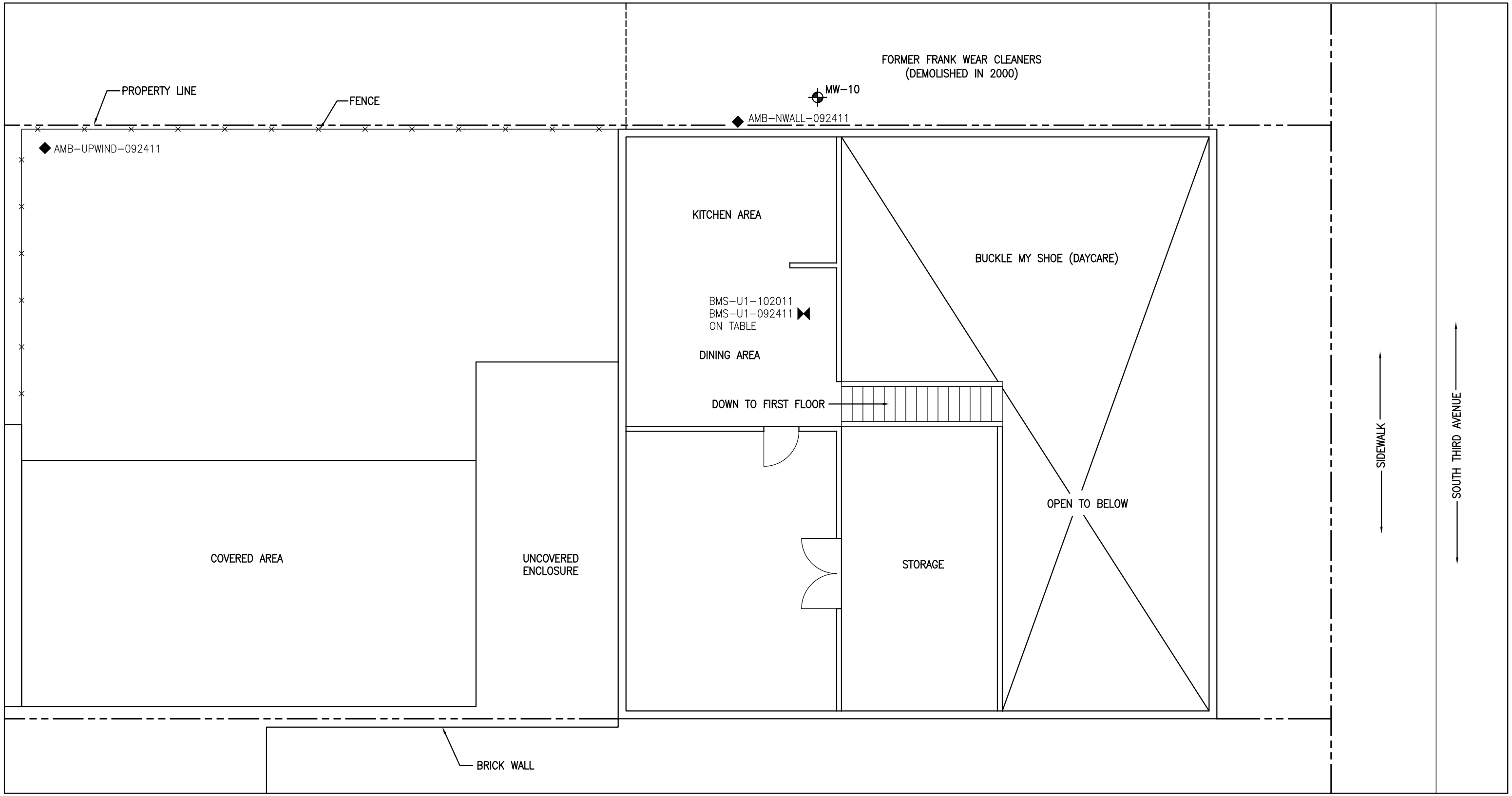
WASHINGTON DEPARTMENT OF ECOLOGY
FRANK WEAR SITE
YAKIMA, WASHINGTON

FIRST FLOOR

119016.00\FIG-02

10/11

FIGURE 2



LEGEND

BMS-U1-092411 ON TABLE — 24-HR INDOOR AIR LOCATION

AMB-UPWIND-092411 — 24-HR AMBIENT AIR LOCATION

MW-10 — MONITORING WELL

NOTE: ALL LOCATIONS ARE APPROXIMATE

N

0 5 10

APPROXIMATE SCALE 1/8"=1'

Kennedy/Jenks Consultants

WASHINGTON DEPARTMENT OF ECOLOGY
FRANK WEAR SITE
YAKIMA, WASHINGTON

SECOND FLOOR

119016.00\FIG-03

10/11

FIGURE 3

Appendix A

- Occupied Dwelling Questionnaire
- Photographs
- Field Forms

Occupied Dwelling Questionnaire

OCCUPIED DWELLING QUESTIONNAIRE
Indoor Air Assessment Survey

Date 9/1/11 Location ID Frank Wear

1. Name Buckle My Shoe Early Learning Center
   Address 108 South Third Avenue
   Yakima, WA
   Home Phone — Work Phone —

2. What is the best time to call to speak with you? _____ At: Work? ☐ or Home? ☐

3. Are you the Owner ☐, Renter ☒, Other ☐ *(please specify)* operator of daycare.
   of this home/building? *If you are not the building owner, please note the owner's contact information*:

4. Total number of occupants/persons at this location? 4 employees
   Number of children? 8 Ages? 1-5yrs

5. How long have you lived/worked in this home/building? _____

General Building Description

6. Type of home/building (*check only one*): Single Family Home ☐, Duplex ☐,
   Condominium/Apartment ☐, Townhome ☐, Other ☒ Childcare Center

7. Home/building description:
   Number of floors 2
   Slab on grade ☒ Basement ☐ Crawlspace ☐ Partial crawlspace/basement ☐
   If basement or crawlspace is present, under how much of the building area? _____%

8. Age of the home/building: ~1920s (years) Not sure/unknown ☐

9. General above-ground home/building construction (*check all that apply*):
Wood ☐, Brick ☒, Concrete ☐, Cement block ☒, Other ☐ _____

10. Has the home/building been weatherized with any of the following? (*check all that apply*): single pane windows
Insulation ☐, Storm windows ☐, Energy-efficient windows ☐, Other ☐ _____

11. Foundation construction (*check all that apply*):
Concrete slab ☒, Fieldstone ☐, Concrete block ☐, Elevated above ground/grade ☐, Other ☐_____

12. Does the building have an attached garage? Yes ☐ No ☒
If yes, is a vehicle usually parked in the garage? Yes ☐ No ☐ N/A ☐

13. What is the drinking water source for the home/building (*check all that apply*):
Public water supply ☒, Private well ☐, Bottled Water ☐, Other ☐_____

14. Does the home/building have a private well for purposes other than drinking?
Yes ☐ No ☒ If yes, please describe what you use the well for: _____
_____

15. Does the home/building have a septic system? Yes ☐ No ☒ Not used ☐ Unknown ☐
If yes, please describe the construction type, location, and date of last service (*if known*):
_____

16. Does the home/building have standing water outside (pond, ditch, swale)? Yes ☐ No ☒

Basement Description, please check appropriate boxes.
If the home/building does not have a basement, skip to question 25.

17. Is basement finished ☐, or unfinished ☐? N/A ☒

18. If finished, how many rooms are in the basement? _____ N/A ☒

What are the rooms used for? Bedrooms ☐, Family Room ☐, Storage ☐, Other ☐ _____

19. Is the basement floor (*check all that apply*) concrete ☐, tile ☐, carpet ☐, dirt ☐,

other ☐ (*please describe*) _____? N/A ☒

20. Are the basement walls poured concrete ☐, cement block ☐, stone ☐, wood ☐, brick ☐,

other ☐ (*please describe*) _____? N/A ☒

21. Does the basement have a moisture problem (check one only)? N/A ☒

Yes, frequently (*3 or more times per year*) ☐

Yes, occasionally (*1 – 2 times per year*) ☐

Yes, rarely (*less than once per year*) ☐

No ☐

If yes, please describe the moisture problem:

_____

_____

22. Does the basement ever flood (*check one only*)? N/A ☒

Yes, frequently (*3 or more times per year*) ☐

Yes, occasionally (*1 – 2 times per year*) ☐

Yes, rarely (*less than once per year*) ☐

No ☐

23. Does the basement have any of the following? (*check all that apply*) N/A ☒

Floor cracks ☐, Wall cracks ☐, Sump ☐, Floor drain ☐,

Other hole/opening in the floor ☐ (please describe)_____

24. Are any of the following used or stored in the basement (*check all that apply*) N/A ☒

Paint ☐, Pain stripper/remover ☐, Paint thinner ☐, Metal degreaser/cleaner ☐, Gasoline ☐,

Diesel fuel ☐, Solvents ☐, Glue ☐, Laundry spot removers ☐, Drain cleaners ☐, Pesticides ☐,

Other equipment with fuel tanks (e.g., chainsaw, lawn mower, snow blower, etc.) ☐

25. Have there recently (within the last six months) any painting or remodeling in the home/building?

Yes ☒ No ☐ If yes, please describe what was done, where in the home/building, and when:

painting in front play area. New Linoleum throughout
New carpet in storage area upstairs. No updates 9/24/11 or 10/2/11 JCH

26. Has new carpeting been installed in the home/building within the last year? Yes ☒ No ☐

If yes, please describe when and where: New carpet in storage area upstairs.
No updates JCH

27. Is there any new upholstery, drapers, or other textiles in the home/building? Yes ☒ No ☐

If yes, please describe carpet squares upstairs in storage room
No updates JCH

28. Do you regularly use or work in a dry cleaning service (*check only one box*)?

Yes, use dry-cleaning regularly (at least weekly) ☐

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

Yes, work at a dry-cleaning service ☐

No ☒

29. Does anyone in the home/building use solvents at work?

Yes ☐, if yes, how many persons? _____

No ☒ *If no, skip to question 31.*

30. If yes for question 29 above, are the work clothes washed in the home/building?

Yes ☐ No ☐ N/A ☒

31. Where is the washer/dryer located? N/A ☐

Basement ☐, Upstairs utility room ☐, Kitchen ☐, Garage ☐, Use a Laundromat ☐,

Other (*please specify*) ☒ Upstairs kitchen area

32. Is the dryer vented to the outdoors? Yes ☒ No ☐ N/A ☐

33. What type(s) of heating does the home/building have (*check all that apply*)?

Fuel type: Gas ☒, Oil ☐, Electric ☐, Wood ☐, Coal ☐, Other ☐ _____

Heat conveyance system: Forced hot air ☒, Forced hot water ☐, Steam ☐, Radiant floor heat ☐,

Wood stove ☐, Coal furnace ☐, Fireplace ☐, Other ☐ _____

34. Does the home/building have air conditioning? Yes ☒ No ☐

If yes, please check the appropriate type(s):

Central air conditioning ☒ on roof.

Window air conditioning unit(s) ☒ east wall

Other (*please describe*) ☐ _____

35. Are any of the following used in the home/building? Room fan ☐ Ceiling fan ☒ Attic fan ☐

Can you ventilate using the fan-only mode of the central air conditioning or forced air heating system? ←

Yes ☒ No ☒ N/A ☐

JCH

36. Has the home/building had termite or other pesticide treatment? Yes ☐ No ☒ Unknown ☐

If yes, please specify the type of pest controlled: _____

and approximate date(s) of service: _____

37. Does anyone in the home/building apply pesticides/herbicides in the yard or garden? Yes ☐ No ☒

If yes, please chemicals used and how often they are applied: _____

_____

38. What type of water heater is used in the home/building?

Gas ☒ Electric ☐ By furnace ☐ Other (*please describe*) ☐ _____

Location: Basement ☐ Upstairs utility room ☐ Garage ☐ Other ☐ _____

39. What types of cooking appliances are used in the home/building?

Gas ☐ Electric ☒ Other (*please describe*) ☐ Unsure

40. Is there a stove exhaust hood present? Yes ☐ No ☒ N/A ☐

Does it vent to the outdoors? Yes ☐ No ☐ N/A ☐

41. How often does smoking occur in the home/building?

Never ☒ Rarely (*guests only*) ☐ Occasionally (*light smokers*) ☐ Frequently (*heavy smokers*) ☐

42. If yes to question 41 above, what type of smoking occurs? N/A ☒

Cigarettes ☐ Cigars ☐ Pipe ☐ Other ☐ _____

43. Are air fresheners regularly used in the home/building? Yes ☐ No ☒ ←

44. Does anyone in the home/building have indoor hobbies of crafts involving: N/A ☐

Heating ☐ Soldering ☐ Welding ☐ Model glues ☐ Paint ☐ Spray paint ☐

Wood finishing ☐ Other (*please specify*) ☒ acrylic paints, elmers glue

45. Are there any pressed wood products in the home/building (e.g., hardwood plywood wall paneling, particleboard, or fiberboard)? Yes ☒ No ☐

If yes, please describe Wooden doors for entry & exit to play areas

46. Please indicate how often the following consumer products are used in the home/building:
*Assume that **never** = never used, **hardly ever** = less than once/month, **occasionally** = about once/month, **regularly** = about once/week, and **often** = more than once/week.*

Product	Frequency of Use				
Spray-on deodorant	Never ☒	Hardly ever ☐	Occasionally ☐	Regularly ☐	Often ☐
Aerosol deodorizers	Never ☒	Hardly ever ☐	Occasionally ☐	Regularly ☐	Often ☐
Insecticides	Never ☐	Hardly ever ☒	Occasionally ☐	Regularly ☐	Often ☐
Disinfectants	Never ☐	Hardly ever ☐	Occasionally ☐	Regularly ☐	Often ☒
Window cleaners	Never ☐	Hardly ever ☐	Occasionally ☒	Regularly ☐	Often ☐
Nail polish remover	Never ☒	Hardly ever ☐	Occasionally ☐	Regularly ☐	Often ☐
Hair sprays	Never ☒	Hardly ever ☐	Occasionally ☐	Regularly ☐	Often ☐
Candles	Never ☒	Hardly ever ☐	Occasionally ☐	Regularly ☐	Often ☐
Incense	Never ☒	Hardly ever ☐	Occasionally ☐	Regularly ☐	Often ☐

47. Please check the weekly cleaning activities in the home/building: ←

Dusting ☒

Dry sweeping ☒

Vacuuming ☒

Polishing (furniture, etc) ☐

Washing/waxing floors ☒

Other (*please describe*) ☐ _____

Note: Floors mopped & bleach used to sanitize all surfaces on main floor as standard practice, daily.
9/28/11 JCH
✓ 10/20/11 JCH

48. Are there any stationary emission sources in the vicinity of the home/building? Yes ☐ No ☒ ←

If yes, please describe _____

49. Are there any mobile emission sources (e.g, highway, bus stop, high-traffic are) in the vicinity of the home/building? Yes ☒ No ☐

If yes, please describe roadway outside - pretty busy
upwind road - Walnut st. pretty busy street

50. Chemical Product Inventory

Please indicate quantities present, and locations of potential indoor sources present in the home/building, including but not limited to:

Paints or paint thinners	Nail polish/polish remover	Perfumes/colognes
Gas-powered equipment	Bathroom cleaner	Hobby supplies (*e.g., solvents, paints, glues, photographic darkroom chemicals, etc*)
Gasoline storage cans	Appliance cleaner	
Cleaning products	Furniture polish	Scented threes, wreaths, potpourri, or candles
Air fresheners	Moth balls	
Oven cleaners	Fuel (including propane) tank(s)	Gun cleaners
Carpet/upholstery cleaners	Wood stove	Brake cleaners
Hairspray	Fireplace	Silverware polish

Potential Source	Quantity Present	Location of Source
Clorox	1 gal/1 gal	utility room/upstairs
elmers glue	several bottles	cabinet in back room kitchen area
vinegar	couple bottles	Cabinet in back room kitchen area
dawn	sm. bottle	kitchen area
Bonide	1 bottle	houseplant insect control - upstairs
goo gone spray gel	1 bottle	upstairs
Great value furniture polish	1 can	upstairs
Johnson Wax glass, multi surface cleaner.	1 bottle	upstairs
acrylic paints	several sm. bottles	Cabinet in back Room
Various paint		storage room
Roberts wall base adhesive		
stains, cleaners, disinfectant.		

various to be removed by occupant

09/24/2011 — chemicals + building/renovation materials were removed from second floor storage room 3 days prior to sampling based on information provided by occupant. Remaining consumer products were a few tubes of caulking/Adhesive

Photographs

APPENDIX A

PHOTOGRAPHS

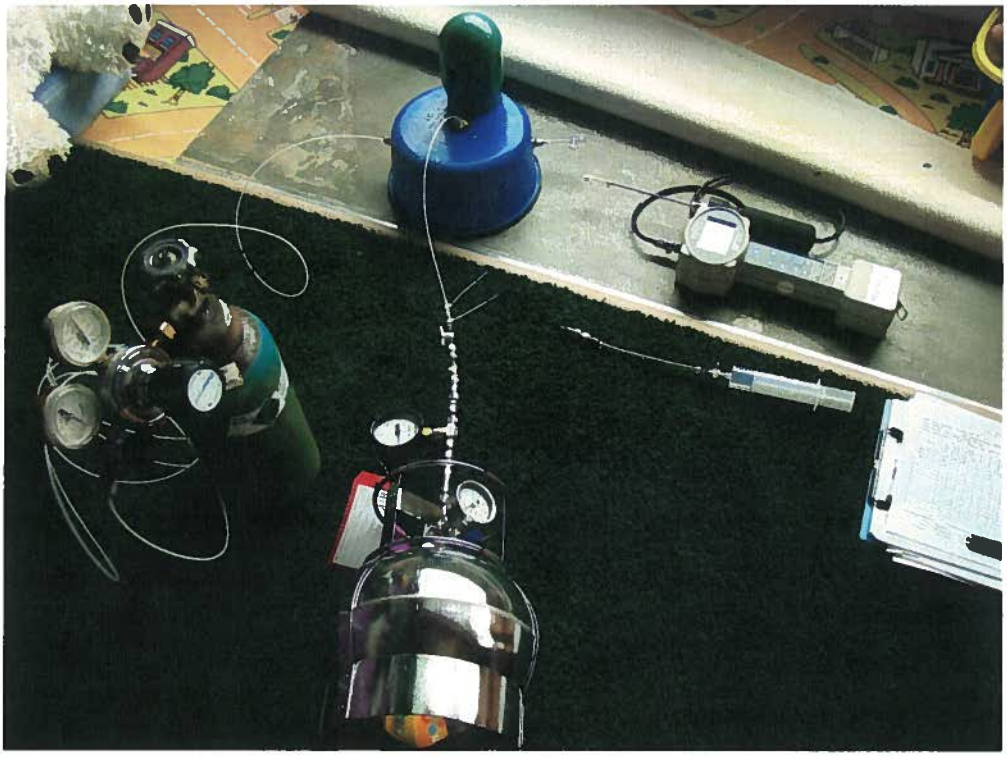


Photo #1: Purging and sampling equipment, including helium shroud for leak check, pictured during subslab soil gas sampling in the childcare center at location SS-1. (September 2011)

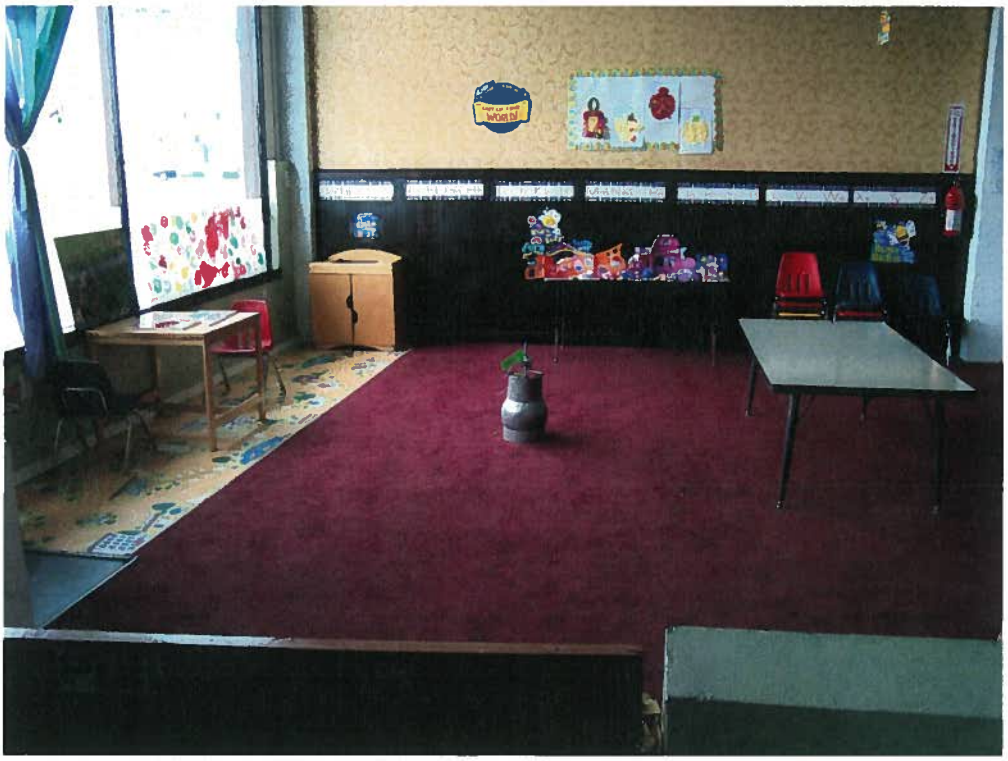


Photo #2: Collection of 24-hr indoor air sample on the main floor of the childcare center at location BMS-M3. (September 2011)

APPENDIX A

PHOTOGRAPHS

Photo #3: Collection of 24-hour indoor air sample on the second floor at location BMS-U1. (September 2011)

Photo #4: Collection of 24-hour ambient air sample at location AMB-UPWIND. (September 2011)

Field Forms

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR AIR SAMPLING LOG

Project No.: 1196016.00

Date: 10-20-2011

Sampling Location ID: Buckle My Shoe Learning Center

Sampling Personnel: Josh

Weather conditions (Note approximate wind speed/direction, rain, and temperature): ~50-60°F outside; overcast in the AM to partly cloudy in PM; light wind out of the west

Number of canisters placed in building: 4 canisters

Location of canister(s) within building: 1 upstairs on kitchen table, 1 on N-wall in sleeping/play area atop a wooden storage box, 1 in SW-corner play/sleeping area on small table in center of room, 1 on desk in center of main floor

Location of duplicate sample(s), if taken: none - per Ecology's request.

Sample ID	Canister serial no.	Flow controller serial no.	Temp. at sample	LAB initial vacuum of canister (in.	FIELD Initial vacuum of canister	Sample start time	Sample end time	Final vacuum of canister (in. Hg)
BMS-M1-102011	12022	FC00787	270°F	—	-30	0646	1841 ~~0644~~	-8.5
BMS-M2-102011	34457	FC00425 ~~FC00493~~ (SUB)	~70°F	—	-30	0648	1843 ~~0643~~	-8.5
BMS-M3-102011	12956	6527	270°F	—	-30	0649	1842 ~~0646~~	-6.0
BMS-U2-102011	915	FC00649	~70°F	—	-29	0650	1850 ~~0650~~	-6.0

Comments (Odors present, smoking, windows/doors open during sampling, etc.): Windows were all open upon arrival, but closed at Ecology's request just prior to sampling; disinfecting with bleach throughout the main floor during the day; vacuuming in evening occurred; ceiling fans & HVAC running during sampling (+ sweeping)

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR AIR SAMPLING LOG

Project No.: 1196016.00

Date: 9/24/2011

Sampling Location ID: Buckle My Shoe Learning Center

Sampling Personnel: JH

Weather conditions (Note approximate wind speed/direction, rain, and temperature): Sunny & clear, ~50°F, calm wind warming to ~75°F by 10AM

Number of canisters placed in building: 4 canisters

Location of canister(s) within building: 1 upstairs on kitchen table, 1 in N-corner sleeping area on floor, 1 in SW-corner play/sleeping area on floor, 1 on desk in center of main floor just inside front door

Location of duplicate sample(s), if taken: none — per Ecology's request onsite.

Sample ID	Canister serial no.	Flow controller serial no.	Temp. at sample	LAB initial vacuum of canister (in.	FIELD initial vacuum of canister	Sample start time	Sample end time	Final vacuum of canister (in. Hg)
BMS-V1-092411	4175	40062	~70°F	—	-30+	1004	0953	-11.5
BMS-M1-092411	80/65	100/02	~70°F	—	-29	1007	0956	-5.5
BMS-M2-092411	34763	40311	~70°F	—	-29	1005	0955	-7
BMS-M3-092411	33876	40369	~70°F	—	-27.5	1006	0954	-5

Comments (Odors present, smoking, windows/doors open during sampling, etc.): upstairs windows open upon arrival and were closed prior to sampling

Ecology Former Frank Wear Site (Yakima, WA)
FIELD INDOOR SOIL GAS SAMPLING LOG

Project No.: 1196016.00

Date: 9/24/11 - 9/25/2011

Sampling Location ID: Buckle My Shoe Learning Center

Sampling Personnel: JH

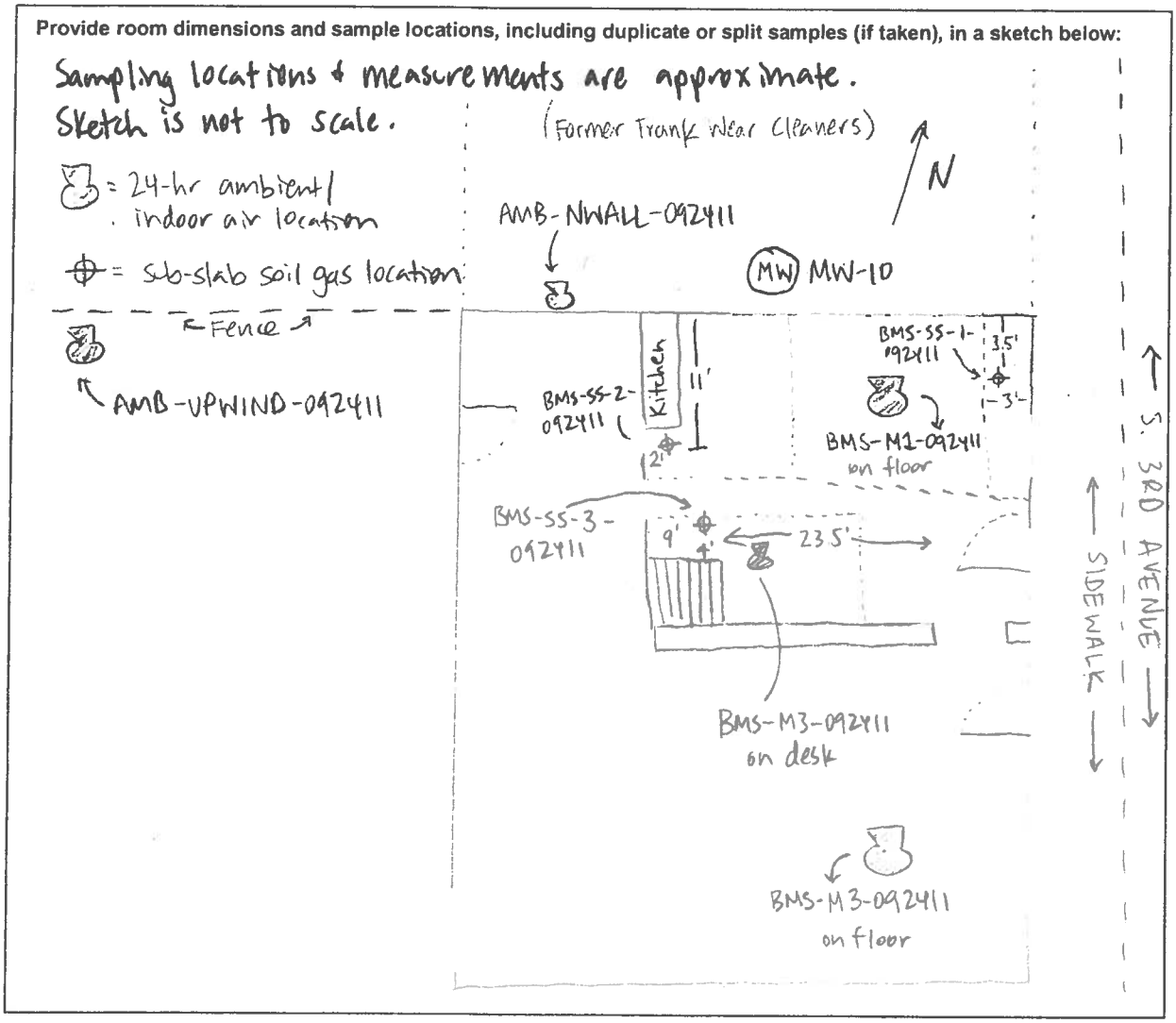
Weather conditions (Note approximate wind speed/direction, rain, and temperature): ~70°F

cloudy, light wind from west

Floor Type: Dirt (note depth to probe) — Concrete (note thickness) 24" thick SS-1 & SS-2

Other (ex. Mobile Home) — ~5" thick SS-3

Provide room dimensions and sample locations, including duplicate or split samples (if taken), in a sketch below:



Comments (Odors present, smoking, windows/doors open during sampling, etc.):

none.

Ecology Former Frank Wear Site (Yakima, WA)
Ambient Air Sample Log

Date: 9/24/2011

Sampler Name: JH

Weather: Sunny & Clear, ~50°F, Calm wind

Sample ID	Location Description	Canister Number	Flow Controller Number	Initial Vacuum	Sample Start Time	Final Vacuum	Sample End Time
AMB-UPWIND-092~~2011~~11 (JCH)	Play area, NW corner of fence w/ tubing to 6' fence	35249	40155	-29.5	1000	-8	0950
AMB-~~RWALL~~ NWALL-092411 (JCH)	Play area NE corner (can), w/ tubing extending along North Wall	34466	40237	-29.5	1001	-8.5	0951

Kennedy/Jenks Consultants

Subslab and Soil Vapor Survey Log Sheet

Project Name / Location: Ecology Yakima **Date:** 09/25/2011

Client: WDOE **Field Representative(s):** ~~Josh, Steve~~ Dirk Bassett **Arrival Time:** 0930

Samplers Name: Josh Hopp, Steve Misner **Departure Time:** 1500

Weather / Site Conditions: ~70°F, cloudy, light wind out of west

Sample ID	Installation Time	Canister/ Controller No.	Sample Collection		Probe Depth (ft)	Tubing Length (ft)	Purge Volume (mL)	Sample Volume (mL)	Flow Rate (mL/min)	Summa Vacuum Pressure (in Hg)		Tracer Gas Concentrations			Shut-In Test <100" H_2O	Probe Vacuum Pressure <100" H_2O
			Start Time	End Time						Initial	Final	Initial Shroud Conc. (%)	Final Shroud Conc. (%)	Sample (%)		
BMS-SS-1-092511	1040	337	1149	1230	~3"	2ft	200mL	6,000	~200mL/min	-26.5	-5	52.4	55.6	0	✓	—
BMS-SS-2-092511	1105	347	1241	1323	~3"	2ft	200	6,000	~200	-27	-5	61.2	~~750~~ 98.9	750ppm	✓	—
BMS-SS-3-092511	1120	327	1336	1415	~3"	2ft	200	6,000	~200	-26	-5	60.2	55.7	25ppm	✓	—

Probe Installation Materials

Filter: Airstone

Tubing: 1/8" Nylaflow

Termination: 1-Way Valve

Probe Construction Specifications

Borehole Diam: 1"

Subslab Sand Pack: 3" silica sand

Soil Gas Sand Pack: N/A

PV's 1' 1/4-inch tubing = 5 ml 1' 1/8-inch tubing = 1 ml

Field Notes:

Appendix B

Laboratory Analytical Reports and
Chain-of-Custody Documentation

Air Toxics LTD.
Laboratory Services Since 1989

10/9/2011
Ms. Sherri Peterson
Kennedy/Jenks Consultants
1191 2nd Ave.
Suite 630
Seattle WA 98101

Project Name: WDOE Yakima
Project #: 1196016.00 Task 2 Phase 2.4
Workorder #: 1109517

Dear Ms. Sherri Peterson

The following report includes the data for the above referenced project for sample(s) received on 9/27/2011 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

WORK ORDER #: 1109517

Work Order Summary

CLIENT:	Ms. Sherri Peterson Kennedy/Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101	**BILL TO:**	Ms. Sherri Peterson Kennedy/Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101
PHONE:	206-652-4905	**P.O. #**	
FAX:		**PROJECT #**	1196016.00 Task 2 Phase 2.4 WDOE Yakima
DATE RECEIVED:	09/27/2011	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/09/2011		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BMS-V1-092411	Modified TO-15	10.8 "Hg	5 psi
01B	BMS-V1-092411	Modified TO-15	10.8 "Hg	5 psi
02A	BMS-M1-092411	Modified TO-15	7.2 "Hg	5 psi
02B	BMS-M1-092411	Modified TO-15	7.2 "Hg	5 psi
03A	BMS-M2-092411	Modified TO-15	7.6 "Hg	5 psi
03B	BMS-M2-092411	Modified TO-15	7.6 "Hg	5 psi
04A	BMS-M3-092411	Modified TO-15	5.6 "Hg	5 psi
04B	BMS-M3-092411	Modified TO-15	5.6 "Hg	5 psi
05A	AMB-UPWIND-092411	Modified TO-15	6.6 "Hg	5 psi
05B	AMB-UPWIND-092411	Modified TO-15	6.6 "Hg	5 psi
06A	AMB-NWALL-092411	Modified TO-15	8.2 "Hg	5 psi
06B	AMB-NWALL-092411	Modified TO-15	8.2 "Hg	5 psi
07A	Lab Blank	Modified TO-15	NA	NA
07B	Lab Blank	Modified TO-15	NA	NA
08A	CCV	Modified TO-15	NA	NA
08B	CCV	Modified TO-15	NA	NA
09A	LCS	Modified TO-15	NA	NA

Continued on next page

Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1109517

Work Order Summary

CLIENT:	Ms. Sherri Peterson Kennedy/Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101	**BILL TO:**	Ms. Sherri Peterson Kennedy/Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101
PHONE:	206-652-4905	**P.O. #**	
FAX:		**PROJECT #**	1196016.00 Task 2 Phase 2.4 WDOE Yakima
DATE RECEIVED:	09/27/2011	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/09/2011		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
09AA	LCSD	Modified TO-15	NA	NA
09B	LCS	Modified TO-15	NA	NA
09BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Linda D. Truman DATE: 10/09/11

Laboratory Director

Certfication numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089, NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act, Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.
Air Toxics Ltd. 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
Kennedy/Jenks Consultants
Workorder# 1109517

Six 6 Liter Summa Special (SIM Certified) samples were received on September 27, 2011. 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

The Chain of Custody (COC) information for sample BMS-M1-092411 did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

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.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

The recovery of surrogate 1,2-Dichloroethane-d4 in the Laboratory Control Sample was outside control limits. There is no effect on data quality.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

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

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: BMS-V1-092411

Lab ID#: 1109517-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.21	0.27	1.0	1.3

Client Sample ID: BMS-V1-092411

Lab ID#: 1109517-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.042	0.84	0.28	5.7

Client Sample ID: BMS-M1-092411

Lab ID#: 1109517-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.28	0.86	1.4

Client Sample ID: BMS-M1-092411

Lab ID#: 1109517-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,2-Dichloroethane	0.035	0.037	0.14	0.15
Tetrachloroethene	0.035	0.93	0.24	6.3

Client Sample ID: BMS-M2-092411

Lab ID#: 1109517-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.28	0.87	1.3

Client Sample ID: BMS-M2-092411

Lab ID#: 1109517-03B

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: BMS-M2-092411

Lab ID#: 1109517-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.036	0.050	0.19	0.27
Tetrachloroethene	0.036	0.91	0.24	6.2

Client Sample ID: BMS-M3-092411

Lab ID#: 1109517-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.16	0.26	0.80	1.3

Client Sample ID: BMS-M3-092411

Lab ID#: 1109517-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,2-Dichloroethane	0.033	0.036	0.13	0.15
Tetrachloroethene	0.033	0.97	0.22	6.6

Client Sample ID: AMB-UPWIND-092411

Lab ID#: 1109517-05A

No Detections Were Found.

Client Sample ID: AMB-UPWIND-092411

Lab ID#: 1109517-05B

No Detections Were Found.

Client Sample ID: AMB-NWALL-092411

Lab ID#: 1109517-06A

No Detections Were Found.

Client Sample ID: AMB-NWALL-092411

Lab ID#: 1109517-06B

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: AMB-NWALL-092411

Lab ID#: 1109517-06B

No Detections Were Found.

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-V1-092411

Lab ID#: 1109517-01A

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

File Name:	**e092911**	**Date of Collection: 9/25/11 9:53:00 AM**	
Dil. Factor:	**2.09**	**Date of Analysis: 9/29/11 02:20 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.21	0.27	1.0	1.3
trans-1,3-Dichloropropene	0.21	Not Detected	0.95	Not Detected
Chlorobenzene	0.21	Not Detected	0.96	Not Detected
1,2-Dichlorobenzene	0.21	Not Detected	1.2	Not Detected
1,1,1,2-Tetrachloroethane	1.0	Not Detected	7.2	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	109	70-130

Air Toxics LTD.
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Client Sample ID: BMS-V1-092411

Lab ID#: 1109517-01B

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

File Name:	**e092911sim**	**Date of Collection:**	**9/25/11 9:53:00 AM**
Dil. Factor:	**2.09**	**Date of Analysis:**	**9/29/11 02:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.042	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.042	Not Detected	0.23	Not Detected
1,2-Dichloroethane	0.042	Not Detected	0.17	Not Detected
Trichloroethene	0.042	Not Detected	0.22	Not Detected
Tetrachloroethene	0.042	0.84	0.28	5.7

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	108	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M1-092411

Lab ID#: 1109517-02A

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

File Name:	**e092912**	**Date of Collection: 9/25/11 9:56:00 AM**	
Dil. Factor:	**1.76**	**Date of Analysis: 9/29/11 03:06 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.28	0.86	1.4
trans-1,3-Dichloropropene	0.18	Not Detected	0.80	Not Detected
Chlorobenzene	0.18	Not Detected	0.81	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,1,1,2-Tetrachloroethane	0.88	Not Detected	6.0	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	110	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M1-092411

Lab ID#: 1109517-02B

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

File Name:	**e092912sim**	**Date of Collection:**	**9/25/11 9:56:00 AM**
Dil. Factor:	**1.76**	**Date of Analysis:**	**9/29/11 03:06 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.035	Not Detected	0.19	Not Detected
1,2-Dichloroethane	0.035	0.037	0.14	0.15
Trichloroethene	0.035	Not Detected	0.19	Not Detected
Tetrachloroethene	0.035	0.93	0.24	6.3

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	109	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M2-092411

Lab ID#: 1109517-03A

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

File Name:	**e092913**	**Date of Collection: 9/25/11 9:55:00 AM**	
Dil. Factor:	**1.79**	**Date of Analysis: 9/29/11 04:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.28	0.87	1.3
trans-1,3-Dichloropropene	0.18	Not Detected	0.81	Not Detected
Chlorobenzene	0.18	Not Detected	0.82	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,1,1,2-Tetrachloroethane	0.90	Not Detected	6.1	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	108	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M2-092411

Lab ID#: 1109517-03B

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

File Name:	**e092913sim**	**Date of Collection: 9/25/11 9:55:00 AM**	
Dil. Factor:	**1.79**	**Date of Analysis: 9/29/11 04:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.036	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.036	Not Detected	0.20	Not Detected
1,2-Dichloroethane	0.036	Not Detected	0.14	Not Detected
Trichloroethene	0.036	0.050	0.19	0.27
Tetrachloroethene	0.036	0.91	0.24	6.2

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	109	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M3-092411

Lab ID#: 1109517-04A

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

File Name:	**e092914**	**Date of Collection: 9/25/11 9:54:00 AM**	
Dil. Factor:	**1.65**	**Date of Analysis: 9/29/11 05:23 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.16	0.26	0.80	1.3
trans-1,3-Dichloropropene	0.16	Not Detected	0.75	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,1,1,2-Tetrachloroethane	0.82	Not Detected	5.7	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	106	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M3-092411

Lab ID#: 1109517-04B

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

File Name:	**e092914sim**	**Date of Collection:**	**9/25/11 9:54:00 AM**
Dil. Factor:	**1.65**	**Date of Analysis:**	**9/29/11 05:23 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.033	0.036	0.13	0.15
Trichloroethene	0.033	Not Detected	0.18	Not Detected
Tetrachloroethene	0.033	0.97	0.22	6.6

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	109	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: AMB-UPWIND-092411

Lab ID#: 1109517-05A

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

File Name:	**e092915**	**Date of Collection: 9/25/11 9:50:00 AM**	
Dil. Factor:	**1.72**	**Date of Analysis: 9/29/11 06:09 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.17	Not Detected	0.84	Not Detected
trans-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,1,1,2-Tetrachloroethane	0.86	Not Detected	5.9	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	107	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: AMB-UPWIND-092411

Lab ID#: 1109517-05B

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

File Name:	**e092915sim**	**Date of Collection: 9/25/11 9:50:00 AM**	
Dil. Factor:	**1.72**	**Date of Analysis: 9/29/11 06:09 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.034	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.034	Not Detected	0.19	Not Detected
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.034	Not Detected	0.18	Not Detected
Tetrachloroethene	0.034	Not Detected	0.23	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	107	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: AMB-NWALL-092411

Lab ID#: 1109517-06A

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

File Name:	**e092916**	**Date of Collection: 9/25/11 9:51:00 AM**	
Dil. Factor:	**1.84**	**Date of Analysis: 9/29/11 06:47 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	Not Detected	0.90	Not Detected
trans-1,3-Dichloropropene	0.18	Not Detected	0.84	Not Detected
Chlorobenzene	0.18	Not Detected	0.85	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,1,1,2-Tetrachloroethane	0.92	Not Detected	6.3	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	106	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: AMB-NWALL-092411

Lab ID#: 1109517-06B

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

File Name:	**e092916sim**	**Date of Collection: 9/25/11 9:51:00 AM**	
Dil. Factor:	**1.84**	**Date of Analysis: 9/29/11 06:47 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.037	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.037	Not Detected	0.20	Not Detected
1,2-Dichloroethane	0.037	Not Detected	0.15	Not Detected
Trichloroethene	0.037	Not Detected	0.20	Not Detected
Tetrachloroethene	0.037	Not Detected	0.25	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	108	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1109517-07A

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

File Name:	**e092907a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 11:11 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.10	Not Detected	0.49	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,1,1,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	107	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1109517-07B

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

File Name:	**e092907asim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 11:11 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	108	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1109517-08A

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

File Name:	**e092902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 07:33 AM**	

Compound	**%Recovery**
Chloroform	90
trans-1,3-Dichloropropene	91
Chlorobenzene	87
1,2-Dichlorobenzene	94
1,1,1,2-Tetrachloroethane	83

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1109517-08B

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

File Name:	**e092902sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 07:33 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	84
1,1,1-Trichloroethane	91
1,2-Dichloroethane	95
Trichloroethene	79
Tetrachloroethene	82

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1109517-09A

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

File Name:	**e092903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 08:22 AM**	

Compound	**%Recovery**
Chloroform	116
trans-1,3-Dichloropropene	119
Chlorobenzene	112
1,2-Dichlorobenzene	122
1,1,1,2-Tetrachloroethane	Not Spiked

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	142 Q	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	106	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCSD

Lab ID#: 1109517-09AA

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

File Name:	**e092904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 09:01 AM**	

Compound	**%Recovery**
Chloroform	116
trans-1,3-Dichloropropene	116
Chlorobenzene	110
1,2-Dichlorobenzene	118
1,1,1,2-Tetrachloroethane	Not Spiked

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	105	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1109517-09B

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

File Name:	**e092903sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 08:22 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	107
1,1,1-Trichloroethane	119
1,2-Dichloroethane	128
Trichloroethene	104
Tetrachloroethene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	107	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCSD

Lab ID#: 1109517-09BB

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

File Name:	**e092904sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/29/11 09:01 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	106
1,1,1-Trichloroethane	119
1,2-Dichloroethane	126
Trichloroethene	104
Tetrachloroethene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	106	70-130

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 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Sherri Peterson

Collected by: (Print and Sign) Josh Hupp JHC Hupp

Company Kennedy/Jenks Consultants Email SherriPeterson@KennedyJenks.com

Address 1191 2nd Ave., Suite 630 City Seattle State WA Zip 98101

Phone 206-652-4905 Fax

Project Info:
P.O. #
Project # 1196016.00 Task 2 Phase 2.4
Project Name WDOE Yakima

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01AB	BMS-V1-092411	4175	9/24/11	0953	TO-15	-30+	-11.5		
02AB	BMS-M1-092411	80165	9/25/11	0956	↓	-29	-5.5		
03AB	BMS-M2-092411	34763	↓	0955	↓	-29	-7		
04AB	BMS-M3-092411	33876		0954		-27.5	-5		
05AB	AMB-UPWIND-092411	35249		0950		-29.5	-8		
06AB	AMB-NWALL-092411	34466	↓	0951	↓	-29.5	-8.5		
			JHC Hupp						

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
JHC Hupp	9/25/11	ATL	09/27/11 1050
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	UPS	1ZF641880150899250	NA	Good	Yes No (None)	1109517

Form 1293 rev.11

H&P Mobile Geochemistry Inc.

07 October 2011

Ms. Sherri Peterson
Kennedy/Jenks Consultants - Seattle
1191 2nd Ave., Suite 630
Seattle, WA 98101

H&P Project: KJ092811-15
Client Project: 1196016.00 Task 2 Phase 2.4

Dear Ms. Sherri Peterson:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 28-Sep-11 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

J. Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. operates under CA Environmental Lab Accreditation Program Numbers 2579, 2740, 2741, 2742, 2743, 2745 and 2754. National Environmental Laboratory Accreditation Conference (NELAC) Standards Lab #11845

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Mobile Geochemistry Inc.

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760-804-9159 Fax

Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BMS-SS-1-092511	E109121-01	Vapor	25-Sep-11	28-Sep-11
BMS-SS-2-092511	E109121-02	Vapor	25-Sep-11	28-Sep-11
BMS-SS-3-092511	E109121-03	Vapor	25-Sep-11	28-Sep-11

H&P Mobile Geochemistry Inc.

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Kennedy/Jenks Consultants - Seattle 1191 2nd Ave., Suite 630 Seattle, WA 98101	Project: KJ092811-15 Project Number: 1196016.00 Task 2 Phase 2.4 Project Manager: Ms. Sherri Peterson	Reported: 07-Oct-11 08:24

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-092511 (E109121-01) Vapor	**Sampled: 25-Sep-11**	**Received: 28-Sep-11**							
Helium (LCC)	ND	1.0	%	1	EI12807	28-Sep-11	28-Sep-11	ASTM D1945M	
BMS-SS-2-092511 (E109121-02) Vapor	**Sampled: 25-Sep-11**	**Received: 28-Sep-11**							
Helium (LCC)	ND	1.0	%	1	EI12807	28-Sep-11	28-Sep-11	ASTM D1945M	
BMS-SS-3-092511 (E109121-03) Vapor	**Sampled: 25-Sep-11**	**Received: 28-Sep-11**							
Helium (LCC)	ND	1.0	%	1	EI12807	28-Sep-11	28-Sep-11	ASTM D1945M	

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Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-092511 (E109121-01) Vapor	**Sampled: 25-Sep-11**	**Received: 28-Sep-11**							
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3	1	EJ10405	03-Oct-11	04-Oct-11	EPA TO-15	
Chloromethane	ND	2.1	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	7.1	"	"	"	"	"	"	
Vinyl chloride	ND	2.6	"	"	"	"	"	"	
Bromomethane	ND	16	"	"	"	"	"	"	
Chloroethane	ND	8.0	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	5.7	"	"	"	"	"	"	
Acetone	**130**	24	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
Carbon disulfide	**7.2**	6.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
2-Butanone (MEK)	**33**	30	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Chloroform	**7.5**	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.5	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.4	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	9.4	"	"	"	"	"	"	
Bromodichloromethane	ND	6.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	**13**	8.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
Toluene	**11**	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.5	"	"	"	"	"	"	
2-Hexanone (MBK)	**11**	8.3	"	"	"	"	"	"	
Dibromochloromethane	ND	8.6	"	"	"	"	"	"	
Tetrachloroethene	**3600**	69	"	10	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	7.8	"	1	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
Chlorobenzene	ND	4.7	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	

H&P Mobile Geochemistry Inc.

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Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-1-092511 (E109121-01) Vapor Sampled: 25-Sep-11 Received: 28-Sep-11									
o-Xylene	ND	4.4	ug/m3	1	EJ10405	03-Oct-11	04-Oct-11	EPA TO-15	
Bromoform	ND	10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
4-Ethyltoluene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**5.8**	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	7.5	"	"	"	"	"	"	
Hexachlorobutadiene	ND	11	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*96.2 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.3 %*		*77-127*	"	"	"	"	
BMS-SS-2-092511 (E109121-02) Vapor Sampled: 25-Sep-11 Received: 28-Sep-11									
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3	1	EJ10405	03-Oct-11	04-Oct-11	EPA TO-15	
Chloromethane	ND	2.1	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	7.1	"	"	"	"	"	"	
Vinyl chloride	ND	2.6	"	"	"	"	"	"	
Bromomethane	ND	16	"	"	"	"	"	"	
Chloroethane	ND	8.0	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	5.7	"	"	"	"	"	"	
Acetone	**100**	24	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
Carbon disulfide	ND	6.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
2-Butanone (MEK)	**41**	30	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Chloroform	**27**	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.5	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.4	"	"	"	"	"	"	

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Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-2-092511 (E109121-02) Vapor	**Sampled: 25-Sep-11**	**Received: 28-Sep-11**							
Trichloroethene	ND	5.5	ug/m3	1	EJ10405	03-Oct-11	04-Oct-11	EPA TO-15	
1,2-Dichloropropane	ND	9.4	"	"	"	"	"	"	
Bromodichloromethane	ND	6.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	**13**	8.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
Toluene	**19**	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.5	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	8.3	"	"	"	"	"	"	
Dibromochloromethane	ND	8.6	"	"	"	"	"	"	
Tetrachloroethene	**45000**	1400	"	200	"	"	05-Oct-11	"	
1,2-Dibromoethane (EDB)	ND	7.8	"	1	"	"	04-Oct-11	"	
1,1,1,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
Chlorobenzene	ND	4.7	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Bromoform	ND	10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
4-Ethyltoluene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	7.5	"	"	"	"	"	"	
Hexachlorobutadiene	ND	11	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*94.9 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.9 %*		*77-127*	"	"	"	"	

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1191 2nd Ave., Suite 630
Seattle, WA 98101

Project: KJ092811-15
Project Number: 1196016.00 Task 2 Phase 2.4
Project Manager: Ms. Sherri Peterson

Reported:
07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-3-092511 (E109121-03) Vapor	**Sampled: 25-Sep-11**	**Received: 28-Sep-11**							
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3	1	EJ10405	03-Oct-11	04-Oct-11	EPA TO-15	
Chloromethane	ND	2.1	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	7.1	"	"	"	"	"	"	
Vinyl chloride	ND	2.6	"	"	"	"	"	"	
Bromomethane	ND	16	"	"	"	"	"	"	
Chloroethane	ND	8.0	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	5.7	"	"	"	"	"	"	
Acetone	**60**	24	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
Carbon disulfide	ND	6.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
2-Butanone (MEK)	ND	30	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Chloroform	**16**	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.5	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.4	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	9.4	"	"	"	"	"	"	
Bromodichloromethane	ND	6.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	8.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
Toluene	**15**	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.5	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	8.3	"	"	"	"	"	"	
Dibromochloromethane	ND	8.6	"	"	"	"	"	"	
Tetrachloroethene	**50000**	1400	"	200	"	"	05-Oct-11	"	
1,2-Dibromoethane (EDB)	ND	7.8	"	1	"	"	04-Oct-11	"	
1,1,1,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
Chlorobenzene	ND	4.7	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	

H&P Mobile Geochemistry Inc.

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Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
BMS-SS-3-092511 (E109121-03) Vapor Sampled: 25-Sep-11 Received: 28-Sep-11									
o-Xylene	ND	4.4	ug/m3	1	EJ10405	03-Oct-11	04-Oct-11	EPA TO-15	
Bromoform	ND	10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
4-Ethyltoluene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	7.5	"	"	"	"	"	"	
Hexachlorobutadiene	ND	11	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*95.2 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*103 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.1 %*		*77-127*	"	"	"	"	

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Kennedy/Jenks Consultants - Seattle 1191 2nd Ave., Suite 630 Seattle, WA 98101	Project: KJ092811-15 Project Number: 1196016.00 Task 2 Phase 2.4 Project Manager: Ms. Sherri Peterson	Reported: 07-Oct-11 08:24

Soil Gas and Vapor Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI12807 - GC										
Blank (EI12807-BLK1)				Prepared & Analyzed: 28-Sep-11						
Helium (LCC)	ND	1.0	%							

H&P Mobile Geochemistry Inc.

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1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ10405 - TO-15										
Blank (EJ10405-BLK1)				Prepared & Analyzed: 03-Oct-11						
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3							
Chloromethane	ND	2.1	"							
Dichlorotetrafluoroethane (F114)	ND	7.1	"							
Vinyl chloride	ND	2.6	"							
Bromomethane	ND	16	"							
Chloroethane	ND	8.0	"							
Trichlorofluoromethane (F11)	ND	5.7	"							
Acetone	ND	24	"							
1,1-Dichloroethene	ND	4.0	"							
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"							
Methylene chloride (Dichloromethane)	ND	3.5	"							
Carbon disulfide	ND	6.3	"							
trans-1,2-Dichloroethene	ND	8.0	"							
1,1-Dichloroethane	ND	4.1	"							
2-Butanone (MEK)	ND	30	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Chloroform	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.5	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Carbon tetrachloride	ND	6.4	"							
Trichloroethene	ND	5.5	"							
1,2-Dichloropropane	ND	9.4	"							
Bromodichloromethane	ND	6.8	"							
cis-1,3-Dichloropropene	ND	4.6	"							
4-Methyl-2-pentanone (MIBK)	ND	8.3	"							
trans-1,3-Dichloropropene	ND	4.6	"							
Toluene	ND	3.8	"							
1,1,2-Trichloroethane	ND	5.5	"							
2-Hexanone (MBK)	ND	8.3	"							
Dibromochloromethane	ND	8.6	"							
Tetrachloroethene	ND	6.9	"							
1,2-Dibromoethane (EDB)	ND	7.8	"							
1,1,1,2-Tetrachloroethane	ND	7.0	"							

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Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ10405 - TO-15										
Blank (EJ10405-BLK1)				Prepared & Analyzed: 03-Oct-11						
Chlorobenzene	ND	4.7	ug/m3							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
Styrene	ND	4.3	"							
o-Xylene	ND	4.4	"							
Bromoform	ND	10	"							
1,1,2,2-Tetrachloroethane	ND	7.0	"							
4-Ethyltoluene	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	12	"							
1,4-Dichlorobenzene	ND	12	"							
1,2-Dichlorobenzene	ND	12	"							
1,2,4-Trichlorobenzene	ND	7.5	"							
Hexachlorobutadiene	ND	11	"							
Surrogate: 1,2-Dichloroethane-d4	*190*		"	*214*		*88.5*	*76-134*			
Surrogate: Toluene-d8	*188*		"	*207*		*90.9*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*345*		"	*365*		*94.8*	*77-127*			
LCS (EJ10405-BS1)				Prepared & Analyzed: 03-Oct-11						
Dichlorodifluoromethane (F12)	71	5.0	ug/m3	101		70.5	65-135			
Vinyl chloride	37	2.6	"	52.0		71.9	65-135			
Chloroethane	37	8.0	"	53.6		69.4	65-135			
Trichlorofluoromethane (F11)	98	5.7	"	113		86.6	65-135			
1,1-Dichloroethene	71	4.0	"	80.8		87.3	65-135			
1,1,2-Trichlorotrifluoroethane (F113)	130	7.7	"	155		83.4	65-135			
Methylene chloride (Dichloromethane)	56	3.5	"	70.8		78.9	65-135			
trans-1,2-Dichloroethene	67	8.0	"	80.8		82.5	65-135			
1,1-Dichloroethane	71	4.1	"	82.4		86.0	65-135			
cis-1,2-Dichloroethene	65	4.0	"	80.0		80.6	65-135			
Chloroform	80	5.0	"	99.2		80.8	65-135			
1,1,1-Trichloroethane	86	5.5	"	111		77.7	65-135			
1,2-Dichloroethane (EDC)	63	4.1	"	82.4		76.5	65-135			

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Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ10405 - TO-15										
LCS (EJ10405-BS1)				Prepared & Analyzed: 03-Oct-11						
Benzene	56	3.2	ug/m3	64.8		86.9	65-135			
Carbon tetrachloride	100	6.4	"	128		80.0	65-135			
Trichloroethene	97	5.5	"	110		88.6	65-135			
Toluene	65	3.8	"	76.8		84.0	65-135			
1,1,2-Trichloroethane	94	5.5	"	111		84.9	65-135			
Tetrachloroethene	110	6.9	"	138		79.3	65-135			
1,1,1,2-Tetrachloroethane	130	7.0	"	140		93.2	65-135			
Ethylbenzene	87	4.4	"	88.4		97.9	65-135			
m,p-Xylene	200	8.8	"	177		110	65-135			
o-Xylene	98	4.4	"	88.4		111	65-135			
1,1,2,2-Tetrachloroethane	160	7.0	"	140		111	65-135			
Surrogate: 1,2-Dichloroethane-d4	*201*		"	*214*		*93.5*	*76-134*			
Surrogate: Toluene-d8	*199*		"	*207*		*96.1*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*390*		"	*365*		*107*	*77-127*			
LCS Dup (EJ10405-BSD1)				Prepared: 03-Oct-11 Analyzed: 04-Oct-11						
Dichlorodifluoromethane (F12)	75	5.0	ug/m3	101		74.2	65-135	5.09	35	
Vinyl chloride	41	2.6	"	52.0		78.4	65-135	8.69	35	
Chloroethane	38	8.0	"	53.6		70.1	65-135	0.930	35	
Trichlorofluoromethane (F11)	82	5.7	"	113		72.1	65-135	18.3	35	
1,1-Dichloroethene	70	4.0	"	80.8		86.1	65-135	1.32	35	
1,1,2-Trichlorotrifluoroethane (F113)	130	7.7	"	155		80.9	65-135	2.97	35	
Methylene chloride (Dichloromethane)	54	3.5	"	70.8		76.1	65-135	3.53	35	
trans-1,2-Dichloroethene	67	8.0	"	80.8		83.3	65-135	0.960	35	
1,1-Dichloroethane	70	4.1	"	82.4		85.4	65-135	0.640	35	
cis-1,2-Dichloroethene	63	4.0	"	80.0		78.4	65-135	2.84	35	
Chloroform	77	5.0	"	99.2		77.3	65-135	4.36	35	
1,1,1-Trichloroethane	83	5.5	"	111		74.3	65-135	4.57	35	
1,2-Dichloroethane (EDC)	62	4.1	"	82.4		75.4	65-135	1.44	35	
Benzene	57	3.2	"	64.8		87.9	65-135	1.20	35	
Carbon tetrachloride	97	6.4	"	128		75.5	65-135	5.90	35	
Trichloroethene	98	5.5	"	110		89.0	65-135	0.392	35	
Toluene	62	3.8	"	76.8		81.1	65-135	3.56	35	

Mobile Geochemistry Inc.

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Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ10405 - TO-15										
LCS Dup (EJ10405-BSD1)				Prepared: 03-Oct-11 Analyzed: 04-Oct-11						
1,1,2-Trichloroethane	99	5.5	ug/m3	111		89.1	65-135	4.85	35	
Tetrachloroethene	110	6.9	"	138		79.8	65-135	0.687	35	
1,1,1,2-Tetrachloroethane	130	7.0	"	140		89.7	65-135	3.76	35	
Ethylbenzene	86	4.4	"	88.4		97.7	65-135	0.153	35	
m,p-Xylene	190	8.8	"	177		109	65-135	0.950	35	
o-Xylene	95	4.4	"	88.4		108	65-135	3.10	35	
1,1,2,2-Tetrachloroethane	150	7.0	"	140		106	65-135	4.96	35	
Surrogate: 1,2-Dichloroethane-d4	*195*		"	*214*		*90.8*	*76-134*			
Surrogate: Toluene-d8	*203*		"	*207*		*98.2*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*382*		"	*365*		*105*	*77-127*			

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Kennedy/Jenks Consultants - Seattle	Project: KJ092811-15	
1191 2nd Ave., Suite 630	Project Number: 1196016.00 Task 2 Phase 2.4	Reported:
Seattle, WA 98101	Project Manager: Ms. Sherri Peterson	07-Oct-11 08:24

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the Environmental Laboratory Accreditation Program (CA) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste for the following methods:

Certificate# 2741, 2743, 2579, 2754 & 2740 approved for EPA 8260 and LUFT GC/MS
Certificate# 2742, 2745, & 2741 approved for LUFT
Certificate# 2745 & 2742 approved for EPA 418.1

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the National Environmental Accreditation Conference Standards for the category Environmental Analysis Air and Emissions for the following analytes and methods:

1,2,4-Trichlorobenzene by EPA TO-15 & TO-14A
Hexachlorobutadiene by EPA TO-15 & TO-14A
1,2,4-Trimethylbenzene by EPA TO -14A
1,2-Dichlorobenzene by EPA TO-15 & TO-14A
1,3,5-Trimethylbenzene by EPA TO -14A
1,4-Dichlorobenzene by EPA TO-15 & TO-14A
Benzene by EPA TO-15 & TO-14A
Chlorobenzene by EPA TO-15 & TO-14A
Ethyl benzene by EPA TO-15 & TO-14A
Styrene by EPA TO-15 & TO-14A
Toluene by EPA TO-15 & TO-14A
Total Xylenes by EPA TO-15 & TO-14A
1,1,1-Trichloroethane by EPA TO-15 & TO-14A
1,1,2,2-Tetrachloroethane by EPA TO-15 & TO-14A
1,1,2-Trichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethene by EPA TO-15 & TO-14A
1,2-Dichloroethane by EPA TO-15 & TO-14A
1,2-Dichloropropane by EPA TO-15 & TO-14A
Bromoform by EPA TO-15
Bromomethane by EPA TO-15 & TO-14A
Carbon tetrachloride by EPA TO-15 & TO-14A
Chloroethane by EPA TO-15
Chloroform by EPA TO-15 & TO-14A
Chloromethane by EPA TO-15 & TO-14A
cis-1,2-Dichloroethene by EPA TO-15
cis-1,2-Dichloropropene by EPA TO-15 & TO-14A
Methylene chloride by EPA TO -15 & TO-14A
Tetrachloroethane by EPA TO-15 & TO-14A
trans-1,2-Dichloroethene by EPA TO-15
trans-1,2-Dichloropropene by EPA TO-15 & TO-14A
Trichloroethene by EPA TO-15 & TO-14A
Vinyl chloride by EPA TO -15 & TO-14A
2-Butanone by EPA TO-15
4-Methyl-2-Pentanone by EPA TO-15
Hexane by EPA TO-15
Methyl tert-butyl ether by EPA TO-15
Vinyl acetate by EPA TO-15

This certification applies to samples analyzed in summa canisters.

Chain of Custody Record

H&P Mobile Geochemistry Inc.

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☐ 1855 Coronado Ave., Signal Hill, CA 90755 • ph 800.834.9888

Date: 9-25-2011
H&P Project # KJ092811-15
Outside Lab:

Client: Kennedy | Jenks Consultants
Address: 1191 2nd Avenue, Suite 630
Seattle, WA 98101
Email: SherriPeterson@KennedyJenks.com

Collector: Josh Hopp | Steve Misner
Client Project # 1196016.00 Task 2 Phase 2.4
Location: 106 South 3rd Avenue, Yakima, WA
Phone: 206-652-4905 Fax:

Page: 1 of 1
Project Contact: Sherri Peterson
Turn around time: Standard

Geotracker EDF Yes No ☒
Global ID:
Excel EDD: Yes ☒ No ☐

Sample Receipt
Intact: ☑ Yes ☐ No
Seal Intact: ☑ Yes ☐ No ☐ N/A
Cold: ☐ Yes ☐ No ☑ N/A
Temperature: RT

Special Instructions:
UPS TRACK# 1Z 93T T61 84 4247 8139

Lab Work Order # 109121

Sample Name	Field Point Name	Purge Vol	Time	Date	Sample Type	Container Type	Total # of containers	8260B Full List	BTEX/OXY ☐ TPH gas ☐ 8260B	8015M TPH ☐ g ☐ d ☐ ext	418.1 TRPH	VOC's: Full List ☐ 8260B ☒ TO-15	VOC's: Short List/DTSC ☐ 8260B ☐ TO-15	VOC's: SAM, 8260B ☐ SAM A ☐ SAM B	Naphthalene ☐ 8260B ☐ TO-15	Oxygenates ☐ 8260B ☐ TO-15	TPHv gas ☐ 8260B ☐ TO-15	Ketones ☐ 8260B ☐ TO-15	Other ☐ 8260B ☐ TO-15	Leak Check Compound ☐ 1,1 DFA ☒ OTHER #	Methane	Fixed Gases ☐ CO_2 ☐ O_2 ☐ N_2	CAN # / VA-CH #
								SOIL/GW				SOIL VAPOR/AIR ANALYSIS											
BMS-SS-1-092511		200ml	1230	9/25/11	Soil vapor	6L summa	1					X								X			337-6.4
BMS-SS-2-092511		200ml	1323	↓	↓	↓	1					X								X			347-6.0
BMS-SS-3-092511		200ml	1415	↓	↓	↓	1					X								X			327-7.1

Relinquished by: (Signature)	(company)	Received by: (Signature)	(company)	Date	Time
JHCHopp 9/25/11	Kennedy/Jenks Consultants	UPS		9/26/11	0900
UPS			H&P	9/28/11	1135

*Signature constitutes authorization to proceed with analysis

Return to client ☐ Pickup

Air Toxics LTD.
Laboratory Services Since 1989

10/25/2011
Ms. Sherri Peterson
Kennedy/Jenks Consultants
1191 2nd Ave.
Suite 630
Seattle WA 98101

Project Name: WDOE Yakima
Project #: 1196016.00 Task 2 Phase 2.4
Workorder #: 1110474

Dear Ms. Sherri Peterson

The following report includes the data for the above referenced project for sample(s) received on 10/24/2011 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 /2 lists are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Kelly Buettner

Project Manager

Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1110474

Work Order Summary

CLIENT:	Ms. Sherri Peterson Kennedy/Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101	**BILL TO:**	Ms. Sherri Peterson Kennedy/Jenks Consultants 1191 2nd Ave. Suite 630 Seattle, WA 98101
PHONE:	206-652-4905	**P.O. #**	
FAX:		**PROJECT #**	1196016.00 Task 2 Phase 2.4 WDOE Yakima
DATE RECEIVED:	10/24/2011	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/25/2011		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BMS-M1-102011	Modified TO-15 /2 lists	7.4 "Hg	5 psi
01B	BMS-M1-102011	Modified TO-15 /2 lists	7.4 "Hg	5 psi
02A	BMS-M2-102011	Modified TO-15 /2 lists	7.8 "Hg	5 psi
02B	BMS-M2-102011	Modified TO-15 /2 lists	7.8 "Hg	5 psi
03A	BMS-M3-102011	Modified TO-15 /2 lists	6.8 "Hg	5 psi
03B	BMS-M3-102011	Modified TO-15 /2 lists	6.8 "Hg	5 psi
04A	BMS-U1-102011	Modified TO-15 /2 lists	6.2 "Hg	5 psi
04B	BMS-U1-102011	Modified TO-15 /2 lists	6.2 "Hg	5 psi
05A	Lab Blank	Modified TO-15 /2 lists	NA	NA
05B	Lab Blank	Modified TO-15 /2 lists	NA	NA
06A	CCV	Modified TO-15 /2 lists	NA	NA
06B	CCV	Modified TO-15 /2 lists	NA	NA
07A	LCS	Modified TO-15 /2 lists	NA	NA
07AA	LCSD	Modified TO-15 /2 lists	NA	NA
07B	LCS	Modified TO-15 /2 lists	NA	NA
07BB	LCSD	Modified TO-15 /2 lists	NA	NA

CERTIFIED BY: Linda J. Truman DATE: 10/25/11

Laboratory Director

Certfication numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089, NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act, Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.
Air Toxics Ltd. 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
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LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Kennedy/Jenks Consultants
Workorder# 1110474

Four 6 Liter Summa Special (SIM Certified) samples were received on October 24, 2011. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

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

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

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

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15

compound list as per contract or verbal agreement.

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

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

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

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: BMS-M1-102011

Lab ID#: 1110474-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.48	0.87	2.3

Client Sample ID: BMS-M1-102011

Lab ID#: 1110474-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.0053	0.015	0.029	0.080
Tetrachloroethene	0.036	0.88	0.24	6.0

Client Sample ID: BMS-M2-102011

Lab ID#: 1110474-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.50	0.88	2.4

Client Sample ID: BMS-M2-102011

Lab ID#: 1110474-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.0054	0.015	0.029	0.083
Tetrachloroethene	0.036	0.91	0.24	6.2

Client Sample ID: BMS-M3-102011

Lab ID#: 1110474-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.17	0.55	0.84	2.7

Client Sample ID: BMS-M3-102011

Lab ID#: 1110474-03B

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: BMS-M3-102011

Lab ID#: 1110474-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.0052	0.016	0.028	0.085
Tetrachloroethene	0.035	0.95	0.23	6.5

Client Sample ID: BMS-U1-102011

Lab ID#: 1110474-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.17	0.60	0.82	2.9

Client Sample ID: BMS-U1-102011

Lab ID#: 1110474-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.0051	0.016	0.027	0.086
Tetrachloroethene	0.034	0.90	0.23	6.1

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M1-102011

Lab ID#: 1110474-01A

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

File Name:	**a102511**	**Date of Collection: 10/20/11 6:41:00 PM**	
Dil. Factor:	**1.78**	**Date of Analysis: 10/25/11 01:57 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.48	0.87	2.3
trans-1,3-Dichloropropene	0.18	Not Detected	0.81	Not Detected
Chlorobenzene	0.18	Not Detected	0.82	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,1,1,2-Tetrachloroethane	0.89	Not Detected	6.1	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M1-102011

Lab ID#: 1110474-01B

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

File Name:	**a102511sim**	**Date of Collection: 10/20/11 6:41:00 PM**	
Dil. Factor:	**1.78**	**Date of Analysis: 10/25/11 01:57 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.036	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.036	Not Detected	0.19	Not Detected
1,2-Dichloroethane	0.036	Not Detected	0.14	Not Detected
Trichloroethene	0.0053	0.015	0.029	0.080
Tetrachloroethene	0.036	0.88	0.24	6.0

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	105	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M2-102011

Lab ID#: 1110474-02A

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

File Name:	**a102512**	**Date of Collection: 10/20/11 6:43:00 PM**	
Dil. Factor:	**1.81**	**Date of Analysis: 10/25/11 02:34 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.18	0.50	0.88	2.4
trans-1,3-Dichloropropene	0.18	Not Detected	0.82	Not Detected
Chlorobenzene	0.18	Not Detected	0.83	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,1,1,2-Tetrachloroethane	0.90	Not Detected	6.2	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M2-102011

Lab ID#: 1110474-02B

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

File Name:	**a102512sim**	**Date of Collection: 10/20/11 6:43:00 PM**	
Dil. Factor:	**1.81**	**Date of Analysis: 10/25/11 02:34 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.036	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.036	Not Detected	0.20	Not Detected
1,2-Dichloroethane	0.036	Not Detected	0.15	Not Detected
Trichloroethene	0.0054	0.015	0.029	0.083
Tetrachloroethene	0.036	0.91	0.24	6.2

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M3-102011

Lab ID#: 1110474-03A

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

File Name:	**a102513**	**Date of Collection: 10/20/11 6:46:00 PM**	
Dil. Factor:	**1.73**	**Date of Analysis: 10/25/11 03:10 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.17	0.55	0.84	2.7
trans-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
Chlorobenzene	0.17	Not Detected	0.80	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,1,1,2-Tetrachloroethane	0.86	Not Detected	5.9	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	100	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-M3-102011

Lab ID#: 1110474-03B

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

File Name:	**a102513sim**	**Date of Collection: 10/20/11 6:46:00 PM**	
Dil. Factor:	**1.73**	**Date of Analysis: 10/25/11 03:10 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.035	Not Detected	0.19	Not Detected
1,2-Dichloroethane	0.035	Not Detected	0.14	Not Detected
Trichloroethene	0.0052	0.016	0.028	0.085
Tetrachloroethene	0.035	0.95	0.23	6.5

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-U1-102011

Lab ID#: 1110474-04A

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

File Name:	**a102514**	**Date of Collection:**	**10/20/11 6:50:00 PM**
Dil. Factor:	**1.69**	**Date of Analysis:**	**10/25/11 03:47 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.17	0.60	0.82	2.9
trans-1,3-Dichloropropene	0.17	Not Detected	0.77	Not Detected
Chlorobenzene	0.17	Not Detected	0.78	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,1,1,2-Tetrachloroethane	0.84	Not Detected	5.8	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: BMS-U1-102011

Lab ID#: 1110474-04B

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

File Name:	**a102514sim**	**Date of Collection: 10/20/11 6:50:00 PM**	
Dil. Factor:	**1.69**	**Date of Analysis: 10/25/11 03:47 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.0051	0.016	0.027	0.086
Tetrachloroethene	0.034	0.90	0.23	6.1

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1110474-05A

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

File Name:	**a102508a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 11:19 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.10	Not Detected	0.49	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,1,1,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1110474-05B

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

File Name:	**a102508asim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 11:19 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.0030	Not Detected	0.016	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	105	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1110474-06A

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

File Name:	**a102502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 07:29 AM**	

Compound	**%Recovery**
Chloroform	91
trans-1,3-Dichloropropene	91
Chlorobenzene	91
1,2-Dichlorobenzene	78
1,1,1,2-Tetrachloroethane	97

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1110474-06B

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

File Name:	**a102502sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 07:29 AM**	

Compound	**%Recovery**
cis-1,2-Dichloroethene	86
1,1,1-Trichloroethane	86
1,2-Dichloroethane	96
Trichloroethene	76
Tetrachloroethene	81

Container Type: NA - Not Applicable

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

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1110474-07A

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

File Name:	**a102503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 08:09 AM**	

Compound	**%Recovery**
Chloroform	94
trans-1,3-Dichloropropene	91
Chlorobenzene	90
1,2-Dichlorobenzene	93
1,1,1,2-Tetrachloroethane	Not Spiked

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	110	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCSD

Lab ID#: 1110474-07AA

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

File Name:	**a102504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 08:53 AM**	

Compound	%Recovery
Chloroform	97
trans-1,3-Dichloropropene	90
Chlorobenzene	88
1,2-Dichlorobenzene	82
1,1,1,2-Tetrachloroethane	Not Spiked

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1110474-07B

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

File Name:	**a102503sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 08:09 AM**	

Compound	**%Recovery**
cis-1,2-Dichloroethene	87
1,1,1-Trichloroethane	93
1,2-Dichloroethane	99
Trichloroethene	75
Tetrachloroethene	81

Container Type: NA - Not Applicable

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

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCSD

Lab ID#: 1110474-07BB

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

File Name:	**a102504sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/25/11 08:53 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	84
1,1,1-Trichloroethane	94
1,2-Dichloroethane	98
Trichloroethene	75
Tetrachloroethene	80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	108	70-130

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: Sherri Peterson
Collected by: (Print and Sign) Joshua Hopp JHCHopp
Company: Kennedy/Jenks Consultants Email: sherri.peterson@kennedyjenks.com
Address: 1191 2nd Ave, Suite 630 City: Seattle State: WA Zip: 98101
Phone: 206-652-4905 Fax:

Project Info:
P.O. #:
Project #: 196016.00 Task 2 Phase 24
Project Name: WDOE Yakima

Turn Around Time:
☐ Normal
☒ Rush 24-hr TAT (specify)

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01AB	BMS-M1-102011	12022	10/20/11	0646-1841	TO-15 VOC's	-30"	-8.5"		
02AB	BMS-M2-102011	34457		0648-1843		-30"	-8.5"		
03AB	BMS-M3-102011	12956		0649-1846		-30"	-6.0"		
04AB	BMS-U1-102011	915		0650-1850		-29"	-6.0"		

JHC Hopp 10/20/2011

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
JHC Hopp	10/21/2011 0930	NBZ AIR	10/24/11 1020
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	UPS		NA	(ice)	Yes No (None)	1110474

Form 1293 rev.11