Tier II Vapor Intrusion Assessment Report

Taylor Way and Alexander Avenue Fill Area
Former Potter Property
1801 E Alexander Avenue, Tacoma, WA

Agreed Order DE 14260
Facility/Site ID No. 1403183
Cleanup Site ID No. 4692

Final

Prepared for:

Port of Tacoma

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Prepared by:

Maul Foster & Alongi, Inc.
2815 2nd Avenue, Suite 540, Seattle, WA 98121

MAUL FOSTER ALONGI

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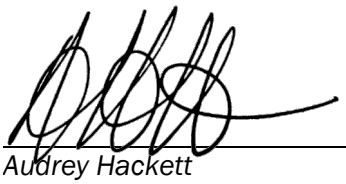
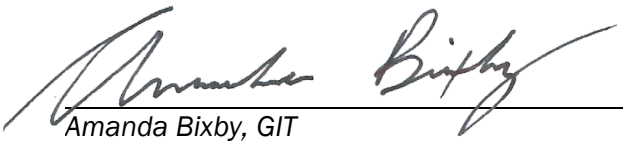
The material and data in this report were prepared under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.



Audrey Hackett
Senior Environmental Scientist

Derek Heitz
Project Environmental Scientist



Amanda Bixby, GIT
Staff Geologist

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Abbreviations

CUL	cleanup level
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
MFA	Maul Foster & Alongi, Inc.
MTCA	Model Toxics Control Act
PCE	tetrachloroethene
PID	photoionization detector
ppm	parts per million
the Port	Port of Tacoma
the Potter Property	1801 E Alexander Avenue, Tacoma, Washington
TCE	trichloroethene
TPH	total petroleum hydrocarbons
TWAAFA	Taylor Way and Alexander Avenue Fill Area
ug/m^3	micrograms per cubic meter
VI	vapor intrusion
VOC	volatile organic compound

1 Introduction

Maul Foster & Alongi, Inc. (MFA) conducted a Tier II vapor intrusion (VI) investigation on behalf of the Port of Tacoma (the Port) at the former Potter property, located at 1801 E Alexander Avenue in Tacoma, Washington (the Potter Property). The approximately 1.7-acre parcel is part of the Taylor Way and Alexander Avenue Fill Area (TWAAFA) site (Facility/Site No. 1403183; Cleanup Site ID No. 4692) (see Figure 1-1). The Potter Property is currently used for shipping container repair and vehicle maintenance operations by the Port's tenant, Handan Containers, and is located between two large-quantity hazardous waste generator facilities that treat, handle, and/or store hazardous waste (see Figure 1-2). The sampling and analyses described in this report were performed consistent with the Washington State Department of Ecology (Ecology)-approved *Indoor Air Sampling and Analysis Plan* (MFA 2023a).

1.1 Background

In July 2022, MFA completed a Tier I VI investigation consisting of sub-slab soil vapor sampling at the Potter Property (MFA 2022). Nine sub-slab vapor samples were collected from Quonset Hut 1, Quonset Hut 2, and the Shop Building (buildings and sample locations shown on Figure 1-3). Total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs), including chloroform, heptane, n-hexane, tetrachloroethene (PCE), and trichloroethene (TCE), exceeded applicable Model Toxics Control Act (MTCA) Method B and/or Method C cleanup levels (CULs) in one or more sub-slab vapor samples from Quonset Hut 2 and the Shop Building (exceedance locations are shown on Figure 1-3).

1.2 Regulatory Framework

The regulatory background for this scope of work is introduced in MFA's Vapor Intrusion Assessment Report (MFA 2022), which documents the Tier I VI investigation activities in support of the TWAAFA Data Gaps Work Plan (DOF 2020), consistent with the requirements of Ecology Enforcement Order No. 19410 and applicable VI guidance. As stated above, the previous investigation identified TPH and VOC concentrations in sub-slab vapor exceeding MTCA Method B and/or Method C CULs at the Potter Property. Ecology's Guidance for Evaluating Vapor Intrusion in Washington State (Ecology 2022a) states that a Tier II evaluation should be implemented when the Tier I evaluation concludes that groundwater and/or soil vapor VOC concentrations near a building exceed VI CULs.

2 Field Investigation

2.1 Property Preparation

MFA conducted a site visit on March 8, 2023, to inventory potential VOC sources and to coordinate a private utility locate to clear proposed sub-slab vapor pin installation locations. Ecology acknowledges that indoor air quality is almost always affected by indoor sources and in some cases ambient sources. Further, Ecology notes that conclusions of a Tier II evaluation are building-specific factors such as layout, construction, heating, ventilation, occupation, and use (Ecology 2022a).

MFA conducted an inventory of potential VOC sources from the buildings. Potential indoor VOC sources, including materials or equipment that may contain volatile compounds as identified through elevated photoionization detector (PID) readings, were inventoried and, to the extent practicable, removed prior to sub-slab vapor and indoor air sampling. Numerous potential occupational VOC sources were identified in the buildings (see Table 2-1 and Figure 1-3). Photographs are provided in Appendix A.

During the visit, MFA used a PID in each building during operating hours to assess the presence of VOCs. PID readings inside the Shop Building, which is where the majority of Handan's operations are conducted, ranged from 1.8 and 35.5 parts per million (ppm). The PID readings in Quonset Huts 1 and 2 were 0.0 ppm (see Figure 1-3).

Additionally, MFA documented building factors that may influence potential vapor intrusion (e.g., utility penetrations) and exchange with ambient air (e.g., no dedicated ventilation system and large entryways that remain open during business hours). Relevant building features are shown on Figure 1-3.

On March 17, 2023, MFA installed two sub-slab vapor pins (TWA-SV-44 and TWA-SV-45) in the Shop Building, per Ecology's request (Ecology 2022b).

On June 9, 2023, more than 24 hours before sampling, MFA worked with the tenant to reduce or eliminate occupational VOC sources to the extent practicable. VOC source removal included the following (see photographs in Appendix A):

- Sealing the door to the storage room with non-VOC masking tape (see photographs 2 and 3)
- Moving VOC sources into the flammable storage cabinets when practicable, then closing and sealing the cabinet doors with non-VOC masking tape (see photographs 1, 4, 5, 6, 8, 9, 10, and 12)
- Discarding spent materials on the work bench in the Shop Building (see photograph 10)
- Positioning the proposed indoor air sample location IA-05 farther west, away from the work bench in the Shop Building, which had particularly high PID readings (see Figure 1-3 and photograph 10)
- Covering and sealing the motor of the decommissioned compressor in the Shop Building (see photograph 7)
- Moving garbage cans outside buildings (see photograph 11)

Following removal of occupational VOC sources, MFA walked the buildings and used a PID to screen potential VOC sources. No VOCs were identified with the PID.

2.2 Differential Manometer Installation and Reading

On June 7, 2023, MFA installed two manometers to log differential pressure for four to five days prior to sample collection. Manometers were installed at two vapor pin locations: one at TWA-SV-37 in Quonset Hut 2 and one at TWA-SV-43 in the Shop Building (Figure 2-1). Differential pressure measurements continued through the completion of indoor air and sub-slab soil vapor sampling. Measurements were stopped at the end of the day on June 12, 2023.

2.3 Indoor Air Sampling

On June 11, 2023, MFA collected two samples in each building on the Potter Property, for a total of six primary indoor air samples (TWA-IA-01 through TWA-IA-06) and one field duplicate sample at TWA-IA-01 (locations shown on Figure 2-1 and in field photographs in Appendix A). MFA positioned 6-liter stainless steel Summa canisters with eight-hour flow controllers in areas near the sub-slab vapor sampling locations that exhibited TPH or VOC exceedances during the Tier I investigation. Canisters were placed in the breathing zone, 3 to 5 feet above the floor, in areas with sufficient air flow. Further, indoor air samples were collected outside normal business hours with the gates closed in an attempt to minimize the inadvertent introduction of ambient or external VOC sources associated with adjacent operations. Sampling activities were conducted more than 24 hours after occupational VOC materials were removed/contained and occupational use of VOCs ceased.

MFA recorded field data on field sampling data sheets before and after sampling, including sampling start and stop times and initial and final canister vacuum readings (see Appendix B).

2.4 Ambient Air Sampling

On June 11, 2023, MFA collected eight ambient air samples: TWA-AA-01 through TWA-AA-04 from around the conjoined Quonset Huts, and TWA-AA-05 through TWA-AA-08 from around the Shop Building (locations shown on Figure 2-1 and in field photographs in Appendix A). MFA reviewed local weather station data from the day of sampling to identify the predominant wind direction. Using this information, MFA identified the two sample locations (TWA-AA-02 and TWA-AA-06) upwind of the buildings for laboratory analysis. Samples were collected in 6-liter Summa canisters with eight-hour flow controllers. Canisters were placed proximate to the buildings and at a height in the breathing zone, 3 to 5 feet above the floor.[1] Ambient air sampling began one hour before indoor air sample collection and was completed one hour before completion of indoor air sampling, as recommended by the U.S. Environmental Protection Agency (EPA) (EPA 2015). Ambient samples were collected during the tenant's non-operational hours to reduce the potential for operational emissions to influence the ambient air sample collection.

[1]Ambient air samples are typically positioned at the height of the buildings' air intakes. However, the buildings have large gates, vents, and no roof intakes; therefore, ambient air samples were collected at heights similar to indoor air samples.

MFA recorded field data on field sampling data sheets before and after sampling, including sampling start and stop times and initial and final canister vacuum readings (see Appendix B).

2.5 Sub-slab Vapor Sampling

On June 12, 2023, MFA collected sub-slab vapor samples from seven locations (shown on Figure 2-1):

- Five samples from the sub-slab vapor pin locations with TPH or VOC exceedances identified during the Tier I VI investigation (TWA-SV-35 and TWA-SV-36 in Quonset Hut 2 and TWA-SV-41 through TWA-SV-43 in the Shop Building)
- Two samples from new permanent sub-slab vapor pin locations in the Shop Building (TWA-SV-44 and TWA-SV-45)

Samples were collected in Tedlar bags and 1-liter Summa canisters with five-minute flow regulators at a flow rate of 200 milliliters per minute. MFA deployed a helium shroud around the sampling apparatus at each location. MFA used an MGD-2002 helium leak detector to measure helium in and around the sampling location in the field. Samples were later analyzed for helium to assess leaks in the sample train. A sub-slab vapor field sampling data sheet is included in Appendix B.

MFA collected one field duplicate, using a T-splitter at the point of sample collection. The field duplicate sample was collected from location TWA-SV-41 (inside the Shop Building) (see Figure 2-1).

MFA recorded field data before and after sample collection at each location. Field parameters included purge start and stop times; sampling start and stop times; initial and final canister vacuum readings; and helium concentrations under the shroud, in the purge bag, and in ambient air (see Appendix B).

3 Analytical Methods

Consistent with the Indoor Air Sampling and Analysis Plan (MFA 2023a), sub-slab vapor, indoor air, and ambient air samples were collected and analyzed for the following:

- Air phase hydrocarbons by Massachusetts Air Phase Hydrocarbons Method
- VOCs by EPA Toxic Organics-15
- Helium by ASTM International D1946

Sub-slab vapor samples were also collected in Tedlar bags and analyzed for methane, oxygen, and carbon dioxide by EPA 3C.

Friedman & Bruya, Inc., of Seattle, Washington, performed the laboratory analyses, except for EPA 3C, which was subcontracted to Fremont Analytical, Inc., also of Seattle, Washington. All analyses were performed by Ecology-accredited laboratories.

4 Results

This section presents a summary of the results of the Tier II VI investigation. Differential pressure readings collected from manometers during the sampling events are presented in Appendix C, and laboratory analytical reports are provided in Appendix D.

Cleanup levels have yet to be established for the Potter Property. Therefore, consistent with the Data Gaps Work Plan (DOF 2020), MFA screened air samples (ambient and indoor air) to MTCA Method B (unrestricted indoor exposure) and MTCA Method C (industrial exposure cancer and noncancer CULs) for air. MFA screened sub-slab soil vapor concentrations to MTCA Method B (unrestricted indoor exposure) and MTCA Method C (industrial exposure) VI cancer and noncancer CULs for sub-slab soil gas. Additionally, MFA compared trichloroethene (TCE) concentrations to the short-term soil vapor action level of 250 micrograms per cubic meter (ug/m^3) for nonresidential buildings (Ecology 2022a). TCE concentrations above this level are associated with acute health risks in women of childbearing age (see Appendix A of Ecology 2022a). Methane concentrations were also compared to the lower explosive limit of 5 percent, as methane presents an explosion hazard but does not have established MTCA Method B or Method C CULs.

Analytical lab reports are included in Appendix C. MFA performed data validation of laboratory analytical results, consistent with the Indoor Air Sampling and Analysis Plan (MFA 2023a). Appendix D summarizes the data evaluation procedures, data usability, and any deviations from specific field and/or laboratory methods. Data are considered acceptable for their intended use, with the appropriate qualifiers assigned.

4.1 Differential Pressure

Differential pressure readings collected during field activities are included in Appendix C. Differential pressure readings were interpreted as follows:

- If the differential pressure reading is positive, then the subsurface pressure exceeds the pressure inside the building and there is potential for an upward pressure gradient through the slab. This indicates that VI may be occurring.
- If the differential pressure reading is negative, then the inverse is true and there is potential for a downward pressure gradient through the slab. This indicates that VI is unlikely to be occurring.

The manometers used to measure the pressure differential between the interiors and beneath the concrete slabs indicated the following:

- The differential pressure in the Shop Building was generally slightly positive, indicating that VI was occurring in this building at the time of the June assessment.
- The differential pressure in Quonset Hut 2 was generally slightly negative, indicating that VI was less likely to occur in this building at the time of the June assessment.

Magnitudes of pressure differentials in the two buildings were substantially similar throughout testing, albeit with opposing sign notations as described above. However, pressure differentials in the Shop Building and Quonset Hut 2 were substantially similar in both magnitude and sign notation from approximately 3:00 a.m. until 2:00 p.m. on June 10, 2023. This corresponds with a time when

the predominant north-northwest wind direction changed to south-southeast. This indicates that pressure differentials may be impacted by wind direction, which is anticipated given the large, unsealed door on the south-southwest wall of the Shop Building and the similar door on the north-northeast wall of Quonset Hut 2. Both doors were closed during the period when the readings were similar in both magnitude and sign notation, indicating that wind and speed direction was likely a contributing factor to differential pressures.

4.2 Ambient and Indoor Air

4.2.1 Ambient Air

A summary of indoor and ambient air analytical data is presented in Table 4-1. The following chemicals were detected in ambient air:

- 1,2-Dichloroethane was detected in TWA-AA-02 at 0.069 ug/m^3.
- Acetone was detected in both TWA-AA-02 and TWA-AA-06 at 13 and 14 ug/m^3, respectively.
- Acrolein was detected in both TWA-AA-02 and TWA-AA-06 at 0.39 and 0.3 ug/m^3, respectively. These concentrations are above both the MTCA Method B and C CULs of 0.0091 ug/m^3 and 0.02 ug/m^3, respectively.
- Benzene was detected in TWA-AA-06 at 0.22 ug/m^3.
- Carbon tetrachloride was detected in both TWA-AA-02 and TWA-AA-06 at 0.45 and 0.46 ug/m^3, respectively. These concentrations are above the MTCA Method B CUL of 0.42 ug/m^3.
- Chloroform was detected in both TWA-AA-02 and TWA-AA-06 at 0.098 and 0.11 ug/m^3, respectively.
- Dichlorodifluoromethane (Freon 12) was detected in both TWA-AA-02 and TWA-AA-06 at 2.4 and 2.3 ug/m^3, respectively.
- C5-C8 aliphatic hydrocarbons were detected in both TWA-AA-02 and TWA-AA-06 at 96 and 140 ug/m^3, respectively.
- TPH (calculated value) were detected in both TWA-AA-02 and TWA-AA-06 at 126 and 171 ug/m^3, respectively, above the generic TPH screening level for vapor intrusion of 46 ug/m^3.

4.2.2 Indoor Air

A suite of chemicals similar to those detected in ambient air samples was also detected in indoor air samples, and generally at similar concentrations. The following chemicals were detected in indoor air:

- 1,2-Dichloroethane was detected in six samples, with concentrations ranging from 0.049 to 0.073 ug/m^3.
- Acetone was detected in all seven samples, with concentrations ranging from 9.7 to 15 ug/m^3.
- Acrolein was detected in all seven samples, with concentrations ranging from 0.13 to 0.26 ug/m^3.
- Benzene was detected in three samples, with concentrations ranging from 0.38 to 0.67 ug/m^3.

- Carbon tetrachloride was detected in all seven samples, with concentrations ranging from 0.45 to 0.47 ug/m^3.
- Chloroform was detected in all seven samples, with concentrations ranging from 0.098 to 0.11 ug/m^3.
- Dichlorodifluoromethane (Freon 12) was detected in all seven samples, with concentrations ranging from 2.1 to 2.4 ug/m^3.
- Ethanol was detected in all seven samples, with concentrations ranging from 8.8 to 16 ug/m^3.
- m,p-Xylene was detected in three samples, with concentrations ranging from 1 to 1.3 ug/m^3.
- n-Butane was detected in three samples, with concentrations ranging from 8.2 to 21 ug/m^3.
- n-Hexane was detected in TWA-IA-02 at 3.9 ug/m^3.
- n-Pentane was detected in three samples, with concentrations ranging from 7.4 to 14 ug/m^3.
- o-Xylene was detected in TWA-IA-06 at 0.53 ug/m^3.
- Total xylenes (calculated value) were detected in three samples, with concentrations ranging from 1.2 to 1.8 ug/m^3.
- C5-C8 aliphatic hydrocarbons were detected in all seven samples, with concentrations ranging from 93 to 180 ug/m^3.
- TPH (calculated value) were detected in all seven samples, with concentrations ranging from 123 to 232 ug/m^3.

4.2.3 Indoor Air Screening

The Shop Building and Quonset Hut 2 are generally exposed to the outside environment through large, open gates; therefore, ambient air contributions to indoor air are significant. Indoor air results were adjusted based on ambient air results for the associated building (Quonset Hut 2 or the Shop Building), using the following equation from the Ecology vapor intrusion guidance:

$$C_{ia-vi} = C_{ia-m} - C_{aa}$$

Where: C_{ia-va} is the indoor air concentration of a constituent due to VI

C_{ia-m} is the concentration of that constituent measured in indoor air

C_{aa} is the concentration of that constituent measured in ambient air and represents the ambient air contribution to the measured indoor air concentration value

Final calculated results represent the building-specific indoor air pollutant concentration based on vapor intrusion or occupational sources, since the contribution from ambient air is accounted for in the calculation.

A summary of calculated indoor air results is presented in Table 4-2. Most of the chemicals detected in ambient air were at the same or higher concentrations than those observed in indoor air samples, indicating that ambient air is the primary source of chemical concentrations in indoor air, rather than VI from beneath the building. After the measured indoor air concentrations were adjusted to subtract the contribution from ambient air, the following chemicals exceeded MTCA Method B or C air CULs:

- Benzene exceeded the MTCA Method B CUL in both locations from Quonset Hut 2. Benzene was detected at 0.39 and 0.38 ug/m^3 at TWA-IA-01 (the primary and field duplicate result, respectively) and at 0.67 ug/m^3 at TWA-IA-02.
- TPH (calculated value) were detected at 85 ug/m^3 at TWA-IA-02 and 61 ug/m^3 at TWA-IA-05, in Quonset Hut 2 and the Shop Building, respectively, which are above the generic TPH screening level for vapor intrusion of 46 ug/m^3.

Further evaluation of these chemicals in context of sub-slab vapor results are discussed in the next section.

4.3 Sub-slab Vapor

A summary of the sub-slab vapor analytical data is presented in Table 4-3. The following chemicals were detected in sub-slab vapor:

- 2,2,4-Trimethylpentane was detected in TWA-SV-35 at 42,000 ug/m^3.
- Chloroform was detected in four samples, with concentrations ranging from 0.44 to 2.5 ug/m^3.
- cis-1,2-Dichloroethene was detected in TWA-SV-44 at 18 ug/m^3.
- Cyclohexane was detected in TWA-SV-35 at 20,000 ug/m^3.
- Ethylbenzene was detected in TWA-SV-36 at 2.9 ug/m^3.
- Heptane was detected in TWA-SV-35 at 29,000 ug/m^3. This concentration exceeded the MTCA Method B and C CULs of 6,100 and 13,000 ug/m^3, respectively.
- m,p-Xylene was detected in TWA-SV-36 at 10 ug/m^3.
- n-Hexane was detected in TWA-SV-35 at 24,000 ug/m^3. This concentration exceeded the MTCA Method B and C CULs of 11,000 and 23,000 ug/m^3, respectively.
- n-Pentane was detected in TWA-SV-35 at 2,400 ug/m^3.
- o-Xylene was detected in TWA-SV-35 and TWA-SV-36 at 170 and 2.6 ug/m^3, respectively.
- PCE was detected in seven samples, with concentrations ranging from 43 to 6,100 ug/m^3. PCE exceeded MTCA Method B or C CULs at four locations:
  - MTCA Method B CUL at TWA-SV-42 (730 ug/m^3).
  - MTCA Method B and C CULs at TWA-SV-45 (2,300 ug/m^3).
  - MTCA Method B and C CULs at TWA-SV-41 and TWA-SV-44 (4,900 for the primary sample and field duplicate at TWA-SV-41 and 6,100 ug/m^3 at TWA-SV-44).
- trans-1,2-Dichloroethene was detected in TWA-SV-44 at 120 ug/m^3.
- TCE was detected in three samples, with concentrations ranging from 75 to 930 ug/m^3. TCE exceeded screening levels at two locations:
  - MTCA Method B and C CULs at TWA-SV-41 (75 ug/m^3 for both the primary and field duplicate result).
  - Short-term action level, along with Method B and C CULs, at TWA-SV-44 (930 ug/m^3).

- Total xylenes (calculated value) were detected in TWA-SV-35 and TWA-SV-36 at 280 and 13 ug/m^3, respectively.
- C5-C8 aliphatic hydrocarbons were detected in four samples, with concentrations ranging from 410 to 670,000 ug/m^3.
- C9-C12 aliphatic hydrocarbons were detected in TWA-SV-35 and TWA-SV-36 at 230,000 and 200 ug/m^3, respectively.
- TPH (calculated value) were detected in four samples, with concentrations ranging from 712 to 904,000 ug/m^3. Two detections exceeded the generic TPH screening level of 1,500 ug/m^3.

The remaining VOCs were non-detect; however, several VOC reporting limits were above their respective CULs because some samples required dilution (see Table 4-3) due to the presence of elevated analyte concentrations (see Appendix D).[2]

A helium shroud was deployed around each sub-slab vapor sampling location to assess leaks in the sample train, as described in Section 2.5. Analytical laboratory results and field screening indicate that no leaks were present in the sample trains during collection of the eight sub-slab vapor samples (see data validation memorandum in Appendix E).

4.4 Anaerobic Biodegradation of TPH

Methane, oxygen, and carbon dioxide were analyzed to evaluate whether TPH biodegradation may be occurring in the subsurface. Oxygen was present in sub-slab vapor samples at concentrations ranging from 1.57 to 20.6 percent (TWA-SV-35 and TWA-SV-44, respectively). The lowest oxygen concentration (1.57 percent) was observed in the sub-slab vapor sample exhibiting the highest concentration of TPH (904,000 ug/m^3): TWA-SV-35, inside Quonset Hut 2.

Concentrations of carbon dioxide ranged from 1.54 to 13.1 percent (TWA-SV-44 and TWA-SV-35, respectively). The highest concentration of carbon dioxide, observed in the sub-slab vapor sample TWA-SV-35, exhibited a concentration of methane of 0.818 percent. Methane was not detected at any other location. These observations are consistent with the 2022 sub-slab vapor sampling event.

The oxygen-depleted environment at TVA-SV-35, combined with the presence of methane and the high carbon dioxide concentration, indicates that anaerobic biodegradation of petroleum hydrocarbons is occurring in this area of the subsurface (ITRC 2014). No other soil-gas samples collected during this investigation or in 2022 exhibited these conditions.

5 Discussion and Conclusions

As stated above, Ecology acknowledges that indoor air quality is almost always affected by household products or other indoor sources and in some cases from ambient sources, and that

[2] At TWA-SV-35, elevated VOC concentrations required several sample dilutions by the laboratory, which increased reporting limits above applicable MTCA Method B and Method C screening levels. Non-detect reporting limits exceeded *all* screening levels for 1,1,2,2-tetrachloroethane; 1,2,4-trichlorobenzene; 2-hexanone; acrolein; allyl chloride; bromomethane; hexachlorobutadiene; and vinyl bromide.

conclusions of a Tier II evaluation are building specific, depending on factors such as layout, construction, heating, ventilation, occupation, and use (Ecology 2022a).

Indoor air concentrations were adjusted to subtract the contribution from ambient air, as described in Section 4.2.3. A summary of apparent contributions from sub-slab vapor, ambient sources, and indoor sources is included below.

5.1 Differential Pressure

Differential pressure readings during the June 2023 assessment indicate that conditions for VI were occurring in the Shop Building during sampling; whereas the differential pressure readings in Quonset Hut 2 during the same time period indicate conditions optimal for VI were not occurring. The cause of contrasting differential pressures in the buildings may be related to the wind direction compared to the locations of the main doors that are used on these buildings.

5.2 Contributions from Outdoor and Ambient Sources

Before ambient air results were subtracted from indoor air concentrations, selected VOCs (acrolein and carbon tetrachloride) exceeded screening levels in both indoor and ambient air samples (see Table 4-1) but were non-detect in sub-slab vapor samples (see Table 4-3), indicating a source other than VI.

Acrolein and carbon tetrachloride exceedances in ambient air samples are similar or higher than indoor air exceedances, suggesting widespread sources (i.e., emissions from nearby operations). Additionally, potential indoor and occupational sources are discussed in Section 5.4.

5.3 Contributions from Sub-slab Vapor

Analytical results for sub-slab vapor samples are presented in Table 4-3 and summarized in Section 4.3. With the exception of TPH, no VOCs that exceeded sub-slab vapor CULs were detected in indoor air, indicating that VI does not appear to be significant contributor to indoor air screening criteria exceedances.

5.3.1 Quonset Hut 2

Benzene was not detected in sub-slab vapor samples collected from beneath Quonset Hut 2; however, the sample location (TWA-SV-35) with the highest TPH concentration had an elevated reporting limit of 80 ug/m^3 for benzene, above the MTCA Method B VI cancer CUL of 11 ug/m^3.

Results from 2022 groundwater monitoring indicate elevated benzene in groundwater at MW-1, adjacent north of Quonset Hut 2 (DOF 2023). VI from impacted groundwater may be contributing to indoor air exceedances of TPH and benzene. Additionally, MFA identified petroleum-impacted soil containing benzene beneath the north portion of Quonset Hut 2 during a recent subsurface investigation at the Potter Property (MFA 2023b).

5.3.2 Shop Building

Numerous VOCs exceed sub-slab vapor CULs in the Shop Building, including TCE and PCE. Most VOCs that exceed sub-slab vapor CULs were not detected in indoor air, indicating that VI is not a significant contributor to indoor air concentrations.

5.4 Contributions from Indoor and Occupational Sources

5.4.1 Quonset Hut 2

Selected VOCs (cis-1,2-Dichloroethene, ethanol, m,p-Xylene, n-Butane, n-Hexane, and n-Pentane)[3] were detected in indoor air that were not detected in sub-slab vapor or ambient air, indicating that sources other than VI or ambient air are contributing to indoor air concentrations.

Three vehicles and numerous vehicle parts were stored in Quonset Hut 2 at the time of sample collection (see photograph 21 in Appendix A). Vehicle and vehicle part storage may contribute to VOC concentrations in indoor air.

5.4.2 Shop Building

Selected VOCs (1,2-Dichloroethane, ethanol, m,p-Xylene, o-Xylene, and total xylenes) were detected in indoor air that were not detected in sub-slab vapor or ambient air, indicating that sources other than VI or ambient air are contributing to indoor air concentrations.

The Shop Building is the primary operational building, where the majority of repair and maintenance activities take place. The Shop Building is the main location where chemicals are used to perform trailer repair operations. MFA observed staining and spills on the slab of the Shop Building (see photograph 23 in Appendix A), which may have contributed to VOC concentrations in indoor air.

5.5 Conclusions

The results of the Tier II assessment indicate that for most VOCs present in sub-slab soil gas, VI resulting in indoor air concentrations above risk-based screening levels is not occurring. Potential exceptions include TPH and benzene, which were both detected in indoor air samples above CULs. However, these VOCs have been identified in indoor/occupational sources at the Potter Property that could not be completely removed before sampling.

[3] Benzene was detected in indoor air in Quonset Hut 2, but not in sub-slab vapor or ambient air. However, benzene was not included in this list, as elevated TPH concentrations in sub-slab vapor sample TWA-SV-35 raised the benzene reporting limit above the applicable CUL.

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MFA. 2023b. Carolyn Wise, LHG, and Audrey Hackett, Maul Foster & Alongi, Inc. *Supplemental Subsurface Investigation, Potter Property, Taylor Way and Alexander Avenue Fill Area.* Letter to Steve Teel, LHG, Washington State Department of Ecology. In progress.

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Figures

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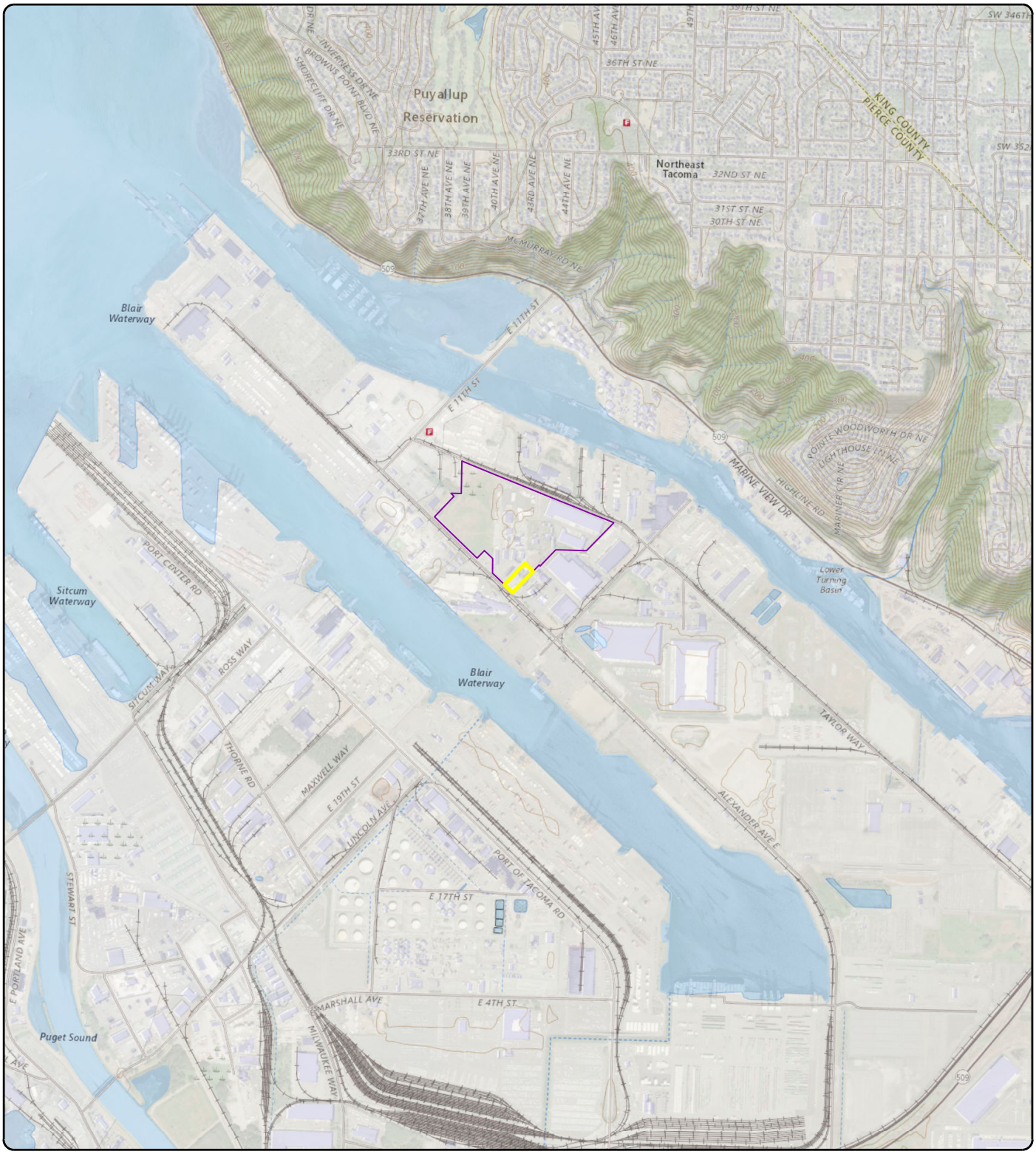

Note
TWAAFA = Taylor Way and Alexander Avenue Fill Area.

Legend

- Potter Property
- TWAAFA Site Boundary

Figure 1-1
Property Location

Port of Tacoma
Former Potter Property
1801 E Alexander Avenue
Tacoma, Washington

0 1,000 2,000
Feet

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Data Sources
U.S. Geological Survey (2021) 7.5-minute topographic quadrangle: Tacoma, Washington.
Township 21 North, Range 3 East, Section 35.
Tax parcel obtained from Pierce County Assessor.
TWAAFA site boundary obtained from Exhibit A of Agreed Order No. DE 14260.

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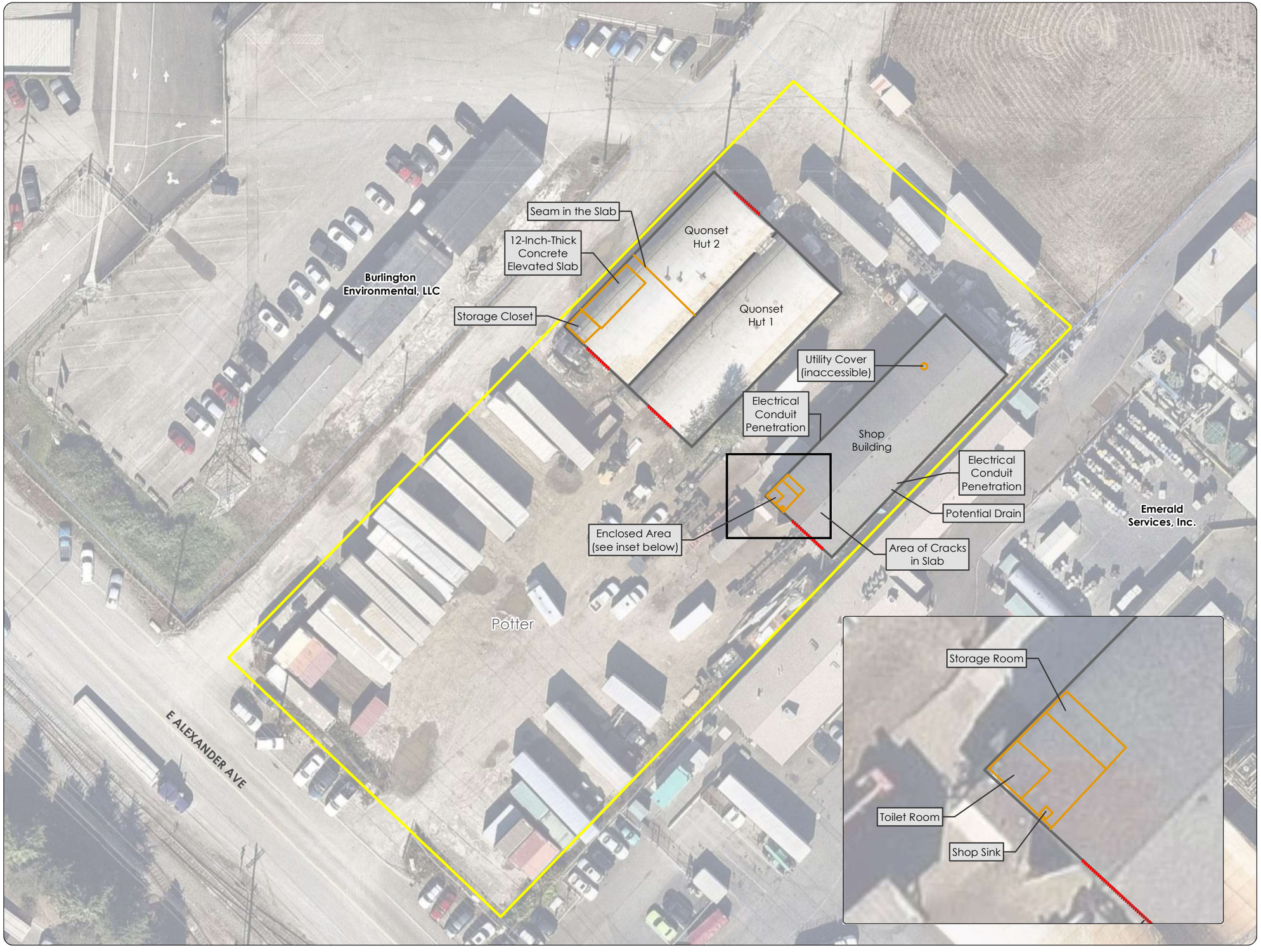
Print Date: 8/16/2023
Reviewed By: jlenahansen
Produced By: jroberts
Project: M0615.20.006

Figure 1-2
Property Features

Port of Tacoma
Former Potter Property
1801 E Alexander Avenue
Tacoma, Washington



Legend

- Chain Link Gate
- Door
- Feature
- Building
- Property
- Tax Parcel

Note
All features are approximate.

0 25 50
Feet

Data Sources
Aerial photograph obtained from Mapbox; tax parcels obtained from Pierce County Assessor.

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Figure 1-3
Building Features and Potential VOC Sources

Port of Tacoma
Former Potter Property
1801 E Alexander Avenue
Tacoma, Washington

Legend

- Sub-Slab Vapor Pin
- Sub-Slab Soil Gas CUL Exceedance
- VOC Measurement
- Chain Link Gate
- Door
- Building
- Feature
- Property

Notes

All features are approximate.
Potential VOC sources are shown in Appendix A. The potential sources with associated action items described in Appendix A are shown on this figure.
Sub-slab soil gas CUL exceedances are based on MTCA Method B or Method C CULs.
VOC field measurements were made with a PID.
CUL = cleanup level.
MTCA = Model Toxics Control Act.
PID = photoionization detector.
ppm = parts per million.
VOC = volatile organic compound.

0 10 20
Feet

Data Sources

Aerial photograph obtained from Mapbox; tax parcel obtained from Pierce County Assessor.

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Figure 2-1
Sample Locations

Port of Tacoma
Former Potter Property
1801 E Alexander Avenue
Tacoma, Washington

Legend

- Indoor Air Sample
- Sub-Slab Vapor Pin
- Ambient Air Sample
- Ambient Air Sample, Not Analyzed
- Previous Sub-Slab Vapor Pin
- Previous Sub-Slab Vapor Pin, Not Sampled
- Previous Sub-Slab Soil Gas CUL Exceedance
- Chain Link Gate
- Exterior Door
- Building
- Property

Notes

All features and sample locations are approximate.
Only two upwind ambient air samples were analyzed.
Sub-slab soil gas CUL exceedances are based on MTCA Method B or Method C CULs.
CUL = cleanup level.
MTCA = Model Toxics Control Act.

0 10 20
Feet

Data Sources

Aerial photograph obtained from Mapbox; tax parcel obtained from Pierce County Assessor.

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Path: X:\0615.20\006\Fig2_1_Sample_Locations.mxd
Project: M0615.20.006 Produced By: jroberts Reviewed By: jlenahansen Print Date: 8/18/2023

Tables

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Table 4-1
Summary of Indoor and Ambient Air Analytical Results
Port of Tacoma Former Potter Property

Building:	Quonset Huts						Shop Building		
Sample Type:	Indoor Air					Ambient Air	Indoor Air		Ambient Air
Location:	TWA-IA-01		TWA-IA-02	TWA-IA-03	TWA-IA-04	TWA-AA-02	TWA-IA-05	TWA-IA-06	TWA-AA-06
Sample Name:	TWA-IA-01-061123	TWA-IA-DUP-061123	TWA-IA-02-061123	TWA-IA-03-061123	TWA-IA-04-061123	TWA-AA-02-061123	TWA-IA-05-061123	TWA-IA-06-061123	TWA-AA-06-061123
Collection Date:	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023
VOCs (ug/m^3)									
1,1,1-Trichloroethane	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.65 U
1,1,2,2-Tetrachloroethane	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.16 U
1,1,2-Trichloroethane	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.065 U
1,1-Dichloroethane	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.49 U
1,1-Dichloroethene	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.48 U
1,2,4-Trichlorobenzene	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.89 U
1,2,4-Trimethylbenzene	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	5.9 U
1,2-Dibromoethane	0.077 U	0.077 U	0.077 U	0.077 U	0.077 U	0.077 U	0.077 U	0.077 U	0.092 U
1,2-Dichlorobenzene	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U
1,2-Dichloroethane	0.069	0.049	0.04 U	0.065	0.069	0.069	0.073	0.073	0.049 U
1,2-Dichloropropane	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.28 U
1,3,5-Trimethylbenzene	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	5.9 U
1,3-Butadiene	0.044 UJ	0.044 UJ	0.044 UJ	0.044 UJ	0.044 UJ	0.044 UJ	0.044 UJ	0.044 UJ	0.053 U
1,3-Dichlorobenzene	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U
1,4-Dichlorobenzene	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.27 U
1,4-Dioxane	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.43 U
2,2,4-Trimethylpentane	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	5.6 U
2-Butanone	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	7.1 U
2-Chlorotoluene	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	6.2 U
2-Hexanone	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.9 U
2-Propanol	8.6 U	8.6 U	8.6 U	8.6 U	8.6 U	8.6 U	8.6 U	8.6 U	10 U
4-Ethyltoluene	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	5.9 U
4-Methyl-2-pentanone	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	9.8 U
Acetone	13 J	9.7 J	15 J	13 J	10 J	13 J	15 J	14 J	14 J
Acrolein	0.17	0.13	0.2	0.19	0.2	0.39	0.26	0.26	0.3
Allyl chloride	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.8 U
Benzene	0.39	0.38	0.67	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.22 J
Benzyl chloride	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.062 U
Bromodichloromethane	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.08 U
Bromoform	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.5 U
Bromomethane	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	4.7 U
Carbon disulfide	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	7.5 U
Carbon tetrachloride	0.45	0.46	0.45	0.45	0.45	0.45	0.47	0.47	0.46
Chlorobenzene	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.55 U
Chloroethane	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	3.2 U
Chloroform	0.11	0.11	0.11	0.1	0.098	0.098	0.11	0.098	0.11

Table 4-1
Summary of Indoor and Ambient Air Analytical Results
Port of Tacoma Former Potter Property

Sample Type:	Indoor Air					Ambient Air	Indoor Air		Ambient Air
Location:	TWA-IA-01		TWA-IA-02	TWA-IA-03	TWA-IA-04	TWA-AA-02	TWA-IA-05	TWA-IA-06	TWA-AA-06
Sample Name:	TWA-IA-01-061123	TWA-IA-DUP-061123	TWA-IA-02-061123	TWA-IA-03-061123	TWA-IA-04-061123	TWA-AA-02-061123	TWA-IA-05-061123	TWA-IA-06-061123	TWA-AA-06-061123
Collection Date:	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023
Chloromethane	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	4.5 U
cis-1,2-Dichloroethene	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.48 U
cis-1,3-Dichloropropene	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	1.1 U
Cyclohexane	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	8.3 U
Dibromochloromethane	0.085 U	0.085 U	0.085 U	0.085 U	0.085 U	0.085 U	0.085 U	0.085 U	0.1 U
Dichlorodifluoromethane (Freon 12)	2.3	2.2	2.4	2.2	2.1	2.4	2.1	2.4	2.3
Ethanol	11	11	16	9.6	8.8	7.5 U	9	9.4	9 U
Ethyl acetate	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	8.6 U
Ethylbenzene	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.52 U
Freon 113	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.8 U
Freon 114	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.5 U
Heptane	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.9 U
Hexachlorobutadiene	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.26 U
Isopropylbenzene	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	12 U
m,p-Xylene	0.87 U	0.87 U	1.2	0.87 U	0.87 U	0.87 U	1	1.3	1 U
Methyl methacrylate	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.9 U
Methyl tert-butyl ether	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	8.7 U
Methylene chloride	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	42 U
Naphthalene	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.31 U
n-Butane	8.9	8.2	21	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	5.7 U
n-Hexane	3.5 U	3.5 U	3.9	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	4.2 U
n-Nonane	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	6.3 U
n-Pentane	7.8	7.4	14	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	7.1 U
n-Propylbenzene	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	5.9 U
o-Xylene	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.53	0.52 U
Propylene	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.4 U
Styrene	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	1 U
tert-Butyl alcohol	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U	15 U
Tetrachloroethene	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	8.1 U
Tetrahydrofuran	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.71 U
Toluene	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	9 U
trans-1,2-Dichloroethene	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.48 U
trans-1,3-Dichloropropene	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.54 U
Trichloroethene	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.13 U
Trichlorofluoromethane (Freon 11)	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.7 U
Vinyl acetate	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	8.5 U
Vinyl bromide	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.52 U
Vinyl chloride	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.31 U

Table 4-1
Summary of Indoor and Ambient Air Analytical Results
Port of Tacoma Former Potter Property

Sample Type:	Indoor Air					Ambient Air	Indoor Air		Ambient Air
Location:	TWA-IA-01		TWA-IA-02	TWA-IA-03	TWA-IA-04	TWA-AA-02	TWA-IA-05	TWA-IA-06	TWA-AA-06
Sample Name:	TWA-IA-01-061123	TWA-IA-DUP-061123	TWA-IA-02-061123	TWA-IA-03-061123	TWA-IA-04-061123	TWA-AA-02-061123	TWA-IA-05-061123	TWA-IA-06-061123	TWA-AA-06-061123
Collection Date:	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023
Xylenes, total[a]	0.87 U	0.87 U	1.4	0.87 U	0.87 U	0.87 U	1.2	1.8	1 U
APH (ug/m^3)									
C5-C8 Aliphatic hydrocarbons	130	140	180	100	93	96	120	100	140
C9-C12 Aliphatic hydrocarbons	25 U	25 U	25 U	25 U	25 U	25 U	94	25 U	25 U
C9-C10 Aromatic hydrocarbons	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
TPH (ug/m^3)									
TPH[b][1]	160	170	211	130	123	126	232	131	171 J

Notes

APH = air-phase petroleum hydrocarbons.

J = result is estimated.

TPH = total petroleum hydrocarbons.

U = result is non-detect at the method reporting limit.

ug/m^3 = micrograms per cubic meter.

UJ = result is non-detect with an estimated reporting limit.

VOC = volatile organic compound.

[a]Total xylenes is the sum of m,p-xylene and o-xylene. When results are non-detect, half the reporting limit is used. When both results are non-detect, the highest reporting limit is shown.

[b]TPH is the sum of benzene, ethylbenzene, naphthalene, toluene, total xylenes, C5-C8 aliphatic hydrocarbons, C9-C12 aliphatic hydrocarbons, and C9-C10 aromatic hydrocarbons. Non-detect results are summed at one-half the reporting limit.

Reference

[1]Ecology. 2022. *Guidance for Evaluating Vapor Intrusion in Washington State.* Washington State Department of Ecology—Toxics Cleanup Program, Publication No. 09-09-047, Olympia, Washington. March.

Table 4-2
Summary of Calculated Indoor Air Analytical Results
Port of Tacoma Former Potter Property

Building:	MTCA Method B, Air[1]		MTCA Method C, Air[1]		OSHA Permissible Exposure Limits[a][2]	Quonset Huts						Shop Building		
Sample Type:						Indoor Air					Ambient Air	Indoor Air		Ambient Air
Location:						TWA-IA-01		TWA-IA-02	TWA-IA-03	TWA-IA-04	TWA-AA-02	TWA-IA-05	TWA-IA-06	TWA-AA-06
Sample Name:	Noncancer	Cancer	Noncancer	Cancer		TWA-IA-01-061123	TWA-IA-DUP-061123	TWA-IA-02-061123	TWA-IA-03-061123	TWA-IA-04-061123	TWA-AA-02-061123	TWA-IA-05-061123	TWA-IA-06-061123	TWA-AA-06-061123
Collection Date:						06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023	06/11/2023
VOCs (ug/m^3)														
1,2-Dichloroethane	3.2	0.096	7	0.96	202,000[b]	ND T	ND T	ND	ND T	ND T	0.069	0.073	0.073	ND
Acetone	NV	NV	NV	NV	2,400,000	ND T	ND T	2 JT	ND T	ND T	13 J	1 JT	ND T	14 J
Acrolein	0.0091	NV	0.02	NV	250	ND T	ND T	ND T	ND T	ND T	0.39	ND T	ND T	0.3
Benzene	14	0.32	30	3.2	31,900[b]	0.39	0.38	0.67	ND	ND	ND	ND	ND	0.22 J
Carbon tetrachloride	46	0.42	100	4.2	62,900[b]	ND T	0.01 T	ND T	ND T	ND T	0.45	0.01 T	0.01 T	0.46
Chloroform	45	0.11	98	1.1	240,000[c]	0.012 T	0.012 T	0.012 T	0.002 T	ND T	0.098	ND T	ND T	0.11
Dichlorodifluoromethane (Freon 12)	46	NV	100	NV	4,950,000	ND T	ND T	ND T	ND T	ND T	2.4	ND T	0.1 T	2.3
Ethanol	NV	NV	NV	NV	1,900,000	11	11	16	9.6	8.8	ND	9	9.4	ND
m,p-Xylene	NV	NV	NV	NV	NV	ND	ND	1.2	ND	ND	ND	1	1.3	ND
n-Butane	NV	NV	NV	NV	NV	8.9	8.2	21	ND	ND	ND	ND	ND	ND
n-Hexane	320	NV	700	NV	1,800,000	ND	ND	3.9	ND	ND	ND	ND	ND	ND
n-Pentane	460	NV	1,000	NV	2,950,000	7.8	7.4	14	ND	ND	ND	ND	ND	ND
o-Xylene	46	NV	100	NV	NV	ND	ND	ND	ND	ND	ND	ND	0.53	ND
Xylenes, total[d]	46	NV	100	NV	435,000	ND	ND	1.4	ND	ND	ND	1.2	1.8	ND
APH (ug/m^3)														
C5-C8 Aliphatic hydrocarbons	NV	NV	NV	NV	NV	34 T	44 T	84 T	4 T	ND T	96	ND T	ND T	140
C9-C12 Aliphatic hydrocarbons	NV	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	94	ND	ND
TPH (ug/m^3)														
TPH[e][3]	46[f]	NV	46[f]	NV	NV	34 T	44 T	85 T	4 T	ND T	126	61 T	ND T	171 J

Table 4-2
Summary of Calculated Indoor Air Analytical Results
Port of Tacoma Former Potter Property

Notes

Only analytes with one or more detections in indoor air are shown on this table.

Indoor air results are adjusted based on ambient air results for the associated building (Quonset hut or shop building), using the following equation from Ecology vapor intrusion guidance. Final calculated results represent the building-specific indoor air VOC concentration based on vapor intrusion, since the contribution from ambient air is accounted for.[2]

Cvi = Cia - Caa

Where:

Cvi = indoor air concentration due to vapor intrusion.

Cia = indoor air concentration.

Caa = ambient air concentration.

If Cvi equals zero or is a negative value, final indoor air results are shown as ND (with a T qualifier). Ambient contribution to indoor air concentration is likely near 100%.[2]

Where ambient air results are non-detect, indoor air results in the associated building are reported as final with no adjustments (no T qualifier). Indoor air concentrations are likely due to vapor intrusion.[2]

Final detected results were compared with screening criteria. Shading (color key below) indicates values that exceed screening criteria. When multiple criteria are exceeded, results are shaded based on the highest value (or based on MTCA B when MTCA B and MTCA C have the same value).

MTCA Method B, Air, Noncancer

MTCA Method B, Air, Cancer

MTCA Method C, Air, Noncancer

APH = air-phase petroleum hydrocarbons.

Ecology = Washington State Department of Ecology.

J = result is estimated.

JT = result is estimated and calculated.

MTCA = Model Toxics Control Act.

ND = not detected.

NV = no value.

OSHA = Occupational Safety and Health Administration.

T = calculated.

TPH = total petroleum hydrocarbons.

ug/m^3 = micrograms per cubic meter.

VOC = volatile organic compound.

[a]OSHA permissible exposure limits are 8-hour time weighted averages from OSHA Annotated Table Z-1 unless otherwise indicated.

[b]Approximate value. The Annotated OSHA Z-2 Table 8-hour time weighted average concentration in parts per million converted to micrograms per cubic meter using the following formula and rounded to three significant figures:
concentration in ug/m^3 = 0.0409 x concentration in ppb (ppm x 1,000) x molecular weight.

[c]Ceiling limit.

[d]Total xylenes is the sum of m,p-xylene and o-xylene.

[e]TPH is the sum of benzene, ethylbenzene, naphthalene, toluene, total xylenes, C5-C8 aliphatic hydrocarbons, C9-C12 aliphatic hydrocarbons, and C9-C10 aromatic hydrocarbons. Non-detect results are summed at one-half the reporting limit.

[f]Generic TPH screening level for vapor intrusion to indoor air.

References

[1]Ecology. 2023. *Cleanup Levels and Risk Calculation (CLARC) table.* Washington State Department of Ecology—Toxics Cleanup Program. January.

[2]OSHA. 2023. "Permissible Exposure Limits – Annotated Tables." *OSHA Annotated Table Z-1 and Z-2* . Accessed July 13, 2023. https://www.osha.gov/annotated-pels.

[3]Ecology. 2022. *Guidance for Evaluating Vapor Intrusion in Washington State.* Washington State Department of Ecology—Toxics Cleanup Program, Publication No. 09-09-047, Olympia, Washington. March.

Table 4-3
Summary of Sub-slab Vapor Analytical Results
Port of Tacoma Former Potter Property

Location:	MTCA Method B, Vapor Intrusion, Sub-slab Soil Gas[1]		MTCA Method C, Vapor Intrusion, Sub-slab Soil Gas[1]		Short-Term Action Level, Subsurface Soil Gas[2]	Methane Lower Explosive Limit[3]	TWA-SV-35	TWA-SV-36	TWA-SV-41		TWA-SV-42	TWA-SV-43	TWA-SV-44	TWA-SV-45
Sample Name:							TWA-SV-35-061223	TWA-SV-36-061223	TWA-SV-41-061223	TWA-SV-DUP-061223	TWA-SV-42-061223	TWA-SV-43-061223	TWA-SV-44-061223	TWA-SV-45-061223
Collection Date:	Noncancer	Cancer	Noncancer	Cancer	Nonresidential		06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023
Permanent Gases (%)														
Carbon dioxide	NV	NV	NV	NV	NA	NA	13.1	2.86	0.05 U	0.05 U	1.79	2.48	1.54 J	2.64
Methane	NV	NV	NV	NV	NA	5	0.818	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U
Oxygen	NV	NV	NV	NV	NA	NA	1.57	16.2	20.4	20.4	20.3	18.8	20.6 J	18.0
VOCs (ug/m^3)														
1,1,1-Trichloroethane	76,000	NV	170,000	NV	NA	NA	140 U	2.9 U	8.7 U	8.7 U	8.7 U	4.4 U	9.3 UJ	8.7 U
1,1,2,2-Tetrachloroethane	NV	1.4	NV	14	NA	NA	34 U	0.73 U	2.2 U	2.2 U	2.2 U	1.1 U	2.3 UJ	2.2 U
1,1,2-Trichloroethane	3	5.2	6.7	52	NA	NA	14 U	0.29 U	0.87 U	0.87 U	0.87 U	0.44 U	0.93 UJ	0.87 U
1,1-Dichloroethane	NV	52	NV	520	NA	NA	100 U	2.1 U	6.5 U	6.5 U	6.5 U	3.3 U	6.9 UJ	6.5 U
1,1-Dichloroethene	3,000	NV	6,700	NV	NA	NA	99 U	2.1 U	6.3 U	6.3 U	6.3 U	3.2 U	6.7 UJ	6.3 U
1,2,4-Trichlorobenzene	30	NV	67	NV	NA	NA	190 U	3.9 U	12 U	12 U	12 U	6 U	13 UJ	12 U
1,2,4-Trimethylbenzene	910	NV	2,000	NV	NA	NA	1,200 U	26 U	79 U	79 U	79 U	40 U	84 UJ	79 U
1,2-Dibromoethane	140	0.14	300	1.4	NA	NA	19 U	0.41 U	1.2 U	1.2 U	1.2 U	0.62 U	1.3 UJ	1.2 U
1,2-Dichlorobenzene	3,000	NV	6,700	NV	NA	NA	150 U	3.2 U	9.6 U	9.6 U	9.6 U	4.9 U	10 UJ	9.6 U
1,2-Dichloroethane	110	3.2	230	32	NA	NA	10 U	0.21 U	0.65 U	0.65 U	0.65 U	0.33 U	0.69 UJ	0.65 U
1,2-Dichloropropane	61	23	130	230	NA	NA	58 U	1.2 U	3.7 U	3.7 U	3.7 U	1.9 U	3.9 UJ	3.7 U
1,3,5-Trimethylbenzene	910	NV	2,000	NV	NA	NA	1,200 U	26 U	79 U	79 U	79 U	40 U	84 UJ	79 U
1,3-Butadiene	30	2.8	67	28	NA	NA	11 U	0.23 U	0.7 UJ	0.7 UJ	0.7 UJ	0.36 UJ	0.75 UJ	0.71 U
1,3-Dichlorobenzene	NV	NV	NV	NV	NA	NA	150 U	3.2 U	9.6 U	9.6 U	9.6 U	4.9 U	10 UJ	9.6 U
1,4-Dichlorobenzene	12,000	7.6	27,000	76	NA	NA	57 U	1.2 U	3.7 U	3.7 U	3.7 U	1.9 U	3.9 UJ	3.7 U
1,4-Dioxane	460	17	1,000	170	NA	NA	90 U	1.9 U	5.8 U	5.8 U	5.8 U	2.9 U	6.1 UJ	5.8 U
2,2,4-Trimethylpentane	NV	NV	NV	NV	NA	NA	42,000 J	25 U	75 U	75 U	75 U	38 U	79 UJ	75 U
2-Butanone	76,000	NV	170,000	NV	NA	NA	1,500 U	31 U	94 U	94 U	94 U	48 U	100 UJ	94 U
2-Chlorotoluene	NV	NV	NV	NV	NA	NA	1,300 U	27 U	83 U	83 U	83 U	42 U	88 UJ	83 U
2-Hexanone	460	NV	1,000	NV	NA	NA	1,000 U	22 U	66 U	66 U	66 U	33 U	70 UJ	66 U
2-Propanol	NV	NV	NV	NV	NA	NA	2,200 U	46 U	140 U	140 U	140 U	70 U	150 UJ	140 U
4-Ethyltoluene	NV	NV	NV	NV	NA	NA	1,200 U	26 U	79 U	79 U	79 U	40 U	84 UJ	79 U
4-Methyl-2-pentanone	46,000	NV	100,000	NV	NA	NA	2,000 U	43 U	130 U	130 U	130 U	66 U	140 UJ	130 U
Acetone	NV	NV	NV	NV	NA	NA	1,200 U	25 U	76 U	76 U	76 U	38 U	81 UJ	76 U
Acrolein	0.3	NV	0.67	NV	NA	NA	29 U	0.61 U	1.8 U	1.8 U	1.8 U	0.93 U	1.9 UJ	1.8 U
Allyl chloride	15	14	33	140	NA	NA	780 U	17 U	50 U	50 U	50 U	25 U	53 UJ	50 U
Benzene	460	11	1,000	110	NA	NA	80 U	1.7 U	5.1 U	5.1 U	5.1 U	2.6 U	5.4 UJ	5.1 U
Benzyl chloride	15	1.7	33	17	NA	NA	13 U	0.27 U	0.83 U	0.83 U	0.83 U	0.42 U	0.88 UJ	0.83 U
Bromodichloromethane	NV	2.3	NV	23	NA	NA	17 U	0.36 U	1.1 U	1.1 U	1.1 U	0.54 U	1.1 UJ	1.1 U
Bromoform	NV	76	NV	760	NA	NA	520 U	11 U	33 U	33 U	33 U	17 U	35 UJ	33 U
Bromomethane	76	NV	170	NV	NA	NA	970 U	21 U	62 U	62 U	62 U	31 U	66 UJ	62 U
Carbon disulfide	11,000	NV	23,000	NV	NA	NA	1,600 U	33 U	100 U	100 U	100 U	50 U	110 UJ	100 U
Carbon tetrachloride	1,500	14	3,300	140	NA	NA	79 U	1.7 U	5 U	5 U	5 U	2.5 U	5.3 UJ	5 U

Table 4-3
Summary of Sub-slab Vapor Analytical Results
Port of Tacoma Former Potter Property

Location:	MTCA Method B, Vapor Intrusion, Sub-slab Soil Gas[1]		MTCA Method C, Vapor Intrusion, Sub-slab Soil Gas[1]		Short-Term Action Level, Subsurface Soil Gas[2]	Methane Lower Explosive Limit[3]	TWA-SV-35	TWA-SV-36	TWA-SV-41		TWA-SV-42	TWA-SV-43	TWA-SV-44	TWA-SV-45
Sample Name:							TWA-SV-35-061223	TWA-SV-36-061223	TWA-SV-41-061223	TWA-SV-DUP-061223	TWA-SV-42-061223	TWA-SV-43-061223	TWA-SV-44-061223	TWA-SV-45-061223
Collection Date:	Noncancer	Cancer	Noncancer	Cancer	Nonresidential		06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023
Chlorobenzene	760	NV	1,700	NV	NA	NA	120 U	2.4 U	7.4 U	7.4 U	7.4 U	3.7 U	7.8 UJ	7.4 U
Chloroethane	150,000	NV	330,000	NV	NA	NA	660 U	14 U	42 U	42 U	42 U	21 U	45 UJ	42 U
Chloroform	1,500	3.6	3,300	36	NA	NA	12 U	2.5	1.2	1.2	0.78 U	0.44	1.8 J	0.78 U
Chloromethane	1,400	NV	3,000	NV	NA	NA	930 U	20 U	59 U	59 U	59 U	30 U	63 UJ	59 U
cis-1,2-Dichloroethene	610	NV	1,300	NV	NA	NA	99 U	2.1 U	6.3 U	6.3 U	6.3 U	3.2 U	18 J	6.3 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NA	NA	230 U	4.8 U	15 U	15 U	15 U	7.4 U	15 UJ	15 U
Cyclohexane	91,000	NV	200,000	NV	NA	NA	20,000 J	36 U	110 U	110 U	110 U	56 U	120 UJ	110 U
Dibromochloromethane	NV	NV	NV	NV	NA	NA	21 U	0.45 U	1.4 U	1.4 U	1.4 U	0.69 U	1.4 UJ	1.4 U
Dichlorodifluoromethane (Freon 12)	1,500	NV	3,300	NV	NA	NA	250 U	5.2 U	16 U	16 U	16 U	8 U	17 UJ	16 U
Ethanol	NV	NV	NV	NV	NA	NA	1,900 U	40 U	120 U	120 U	120 U	61 U	130 UJ	120 U
Ethyl acetate	1,100	NV	2,300	NV	NA	NA	1,800 U	38 U	120 U	120 U	120 U	58 U	120 UJ	120 U
Ethylbenzene	15,000	NV	33,000	NV	NA	NA	110 U	2.9	6.9 U	6.9 U	6.9 U	3.5 U	7.4 UJ	6.9 U
Freon 113	76,000	NV	170,000	NV	NA	NA	380 U	8.1 U	25 U	25 U	25 U	12 U	26 UJ	25 U
Freon 114	NV	NV	NV	NV	NA	NA	520 U	11 U	34 U	34 U	34 U	17 U	36 UJ	34 U
Heptane	6,100	NV	13,000	NV	NA	NA	29,000 J	22 U	66 U	66 U	66 U	33 U	70 UJ	66 U
Hexachlorobutadiene	NV	3.8	NV	38	NA	NA	53 U	1.1 U	3.4 U	3.4 U	3.4 U	1.7 U	3.6 UJ	3.4 U
Isopropylbenzene	6,100	NV	13,000	NV	NA	NA	2,500 U	52 U	160 U	160 U	160 U	80 U	170 UJ	160 U
m,p-Xylene	NV	NV	NV	NV	NA	NA	220 U	10	14 U	14 U	14 U	7 U	15 UJ	14 U
Methyl methacrylate	11,000	NV	23,000	NV	NA	NA	1,000 U	22 U	66 U	66 U	66 U	33 U	70 UJ	66 U
Methyl tert-butyl ether	46,000	320	100,000	3,200	NA	NA	1,800 U	38 U	120 U	120 U	120 U	58 U	120 UJ	120 U
Methylene chloride	9,100	2,200	20,000	83,000	NA	NA	8,700 U	180 U	560 U	560 U	560 U	280 U	590 UJ	560 U
Naphthalene	46	2.5	100	25	NA	NA	68 U	1.4 U	4.2 U	4.2 U	4.2 U	2.1 U	4.5 UJ	4.2 U
n-Butane	NV	NV	NV	NV	NA	NA	1,200 U	25 U	76 U	76 U	76 U	39 U	81 UJ	76 U
n-Hexane	11,000	NV	23,000	NV	NA	NA	24,000 J	19 U	56 U	56 U	56 U	29 U	60 UJ	56 U
n-Nonane	NV	NV	NV	NV	NA	NA	1,300 U	28 U	84 U	84 U	84 U	42 U	89 UJ	84 U
n-Pentane	NV	NV	NV	NV	NA	NA	2,400	31 U	94 U	94 U	94 U	48 U	100 UJ	94 U
n-Propylbenzene	15,000	NV	33,000	NV	NA	NA	1,200 U	26 U	79 U	79 U	79 U	40 U	84 UJ	79 U
o-Xylene	NV	NV	NV	NV	NA	NA	170	2.6	6.9 U	6.9 U	6.9 U	3.5 U	7.4 UJ	6.9 U
Propylene	NV	NV	NV	NV	NA	NA	300 U	6.4 U	19 U	19 U	19 U	9.8 U	20 UJ	19 U
Styrene	15,000	NV	33,000	NV	NA	NA	210 U	4.5 U	14 U	14 U	14 U	6.9 U	14 UJ	14 U
tert-Butyl alcohol	NV	NV	NV	NV	NA	NA	3,000 U	64 U	190 U	190 U	190 U	98 U	210 UJ	190 U
Tetrachloroethene	610	320	1,300	3,200	NA	NA	1,700 U	43	4,900 J	4,900 J	730	240	6,100 J	2,300 J
Tetrahydrofuran	30,000	NV	67,000	NV	NA	NA	150 U	3.1 U	9.4 U	9.4 U	9.4 U	4.8 U	10 UJ	9.4 U
Toluene	76,000	NV	170,000	NV	NA	NA	1,900 U	40 U	120 U	120 U	120 U	61 U	130 UJ	120 U
trans-1,2-Dichloroethene	610	NV	1,300	NV	NA	NA	99 U	2.1 U	6.3 U	6.3 U	6.3 U	3.2 U	120 J	6.3 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NA	NA	110 U	2.4 U	7.3 U	7.3 U	7.3 U	3.7 U	7.7 UJ	7.3 U
Trichloroethene	30	11	67	200	250	NA	27 U	0.57 U	75	75	1.7 U	0.87 U	930 J	1.7 U
Trichlorofluoromethane (Freon 11)	11,000	NV	23,000	NV	NA	NA	560 U	12 U	36 U	36 U	36 U	18 U	38 UJ	36 U

Table 4-3
Summary of Sub-slab Vapor Analytical Results
Port of Tacoma Former Potter Property

Location:	MTCA Method B, Vapor Intrusion, Sub-slab Soil Gas[1]		MTCA Method C, Vapor Intrusion, Sub-slab Soil Gas[1]		Short-Term Action Level, Subsurface Soil Gas[2]	Methane Lower Explosive Limit[3]	TWA-SV-35	TWA-SV-36	TWA-SV-41		TWA-SV-42	TWA-SV-43	TWA-SV-44	TWA-SV-45
Sample Name:							TWA-SV-35-061223	TWA-SV-36-061223	TWA-SV-41-061223	TWA-SV-DUP-061223	TWA-SV-42-061223	TWA-SV-43-061223	TWA-SV-44-061223	TWA-SV-45-061223
Collection Date:	Noncancer	Cancer	Noncancer	Cancer	Nonresidential		06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023	06/12/2023
Vinyl acetate	3,000	NV	6,700	NV	NA	NA	1,800 U	37 U	110 U	110 U	110 U	57 U	120 UJ	110 U
Vinyl bromide	46	5.6	100	56	NA	NA	110 U	2.3 U	7 U	7 U	7 U	3.5 U	7.4 UJ	7 U
Vinyl chloride	1,500	9.5	3,300	95	NA	NA	64 U	1.4 U	4.1 U	4.1 U	4.1 U	2.1 U	4.3 UJ	4.1 U
Xylenes, total[a]	1,500	NV	3,300	NV	NA	NA	280	13	14 U	14 U	14 U	7 U	15 UJ	14 U
APH (ug/m^3)														
C5-C8 Aliphatic hydrocarbons	NV	NV	NV	NV	NA	NA	670,000 J	410	1,200 U	1,200 U	1,200 U	840	1,300 UJ	2,100
C9-C12 Aliphatic hydrocarbons	NV	NV	NV	NV	NA	NA	230,000 J	200	400 U	400 U	400 U	200 U	420 UJ	400 U
C9-C10 Aromatic hydrocarbons	NV	NV	NV	NV	NA	NA	6,200 U	130 U	400 U	400 U	400 U	200 U	420 UJ	400 U
TPH (ug/m^3)														
TPH[b][2]	1,500[c]	NV	1,500[c]	NV	NA	NA	904,000 J	712	1,200 U	1,200 U	1,200 U	1,080	1,300 UJ	2,580

Notes

Shading (color key below) indicates values that exceed screening criteria; non-detects (U and UJ) were not compared with screening criteria. When multiple criteria are exceeded, results are shaded based on the highest value (or based on MTCA B when MTCA B and MTCA C have the same value).

MTCA Method B, Vapor Intrusion, Sub-slab Soil Gas, Noncancer

MTCA Method B, Vapor Intrusion, Sub-slab Soil Gas, Cancer

MTCA Method C, Vapor Intrusion, Sub-slab Soil Gas, Noncancer

MTCA Method C, Vapor Intrusion, Sub-slab Soil Gas, Cancer

Short-Term Action Level, Subsurface Soil Gas, Nonresidential

APH = air-phase petroleum hydrocarbons.

J = result is estimated.

MTCA = Model Toxics Control Act.

NA = not applicable.

NV = no value.

TPH = total petroleum hydrocarbons.

U = result is non-detect at the method reporting limit.

ug/m^3 = micrograms per cubic meter.

UJ = result is non-detect with an estimated reporting limit.

VOC = volatile organic compound.

[a]Total xylenes is the sum of m,p-xylene and o-xylene. When results are non-detect, half the reporting limit is used. When both results are non-detect, the highest reporting limit is shown.

[b]TPH is the sum of benzene, ethylbenzene, naphthalene, toluene, total xylenes, C5-C8 aliphatic hydrocarbons, C9-C12 aliphatic hydrocarbons, and C9-C10 aromatic hydrocarbons. Non-detect results are summed at one-half the reporting limit. When all results are non-detect, the highest reporting limit is shown.

[c]TPH generic cleanup level.

References

[1]Ecology. 2023. *Cleanup Levels and Risk Calculation (CLARC) table*. Washington State Department of Ecology—Toxics Cleanup Program. January.

[2]Ecology. 2022. *Guidance for Evaluating Vapor Intrusion in Washington State*. Washington State Department of Ecology—Toxics Cleanup Program, Publication No. 09-09-047, Olympia, Washington. March.

[3]National Toxicology Program. 1992. National Toxicology Program Chemical Repository Database. Institute of Environmental Health Sciences, National Institutes of Health (NTP). Research Triangle Park, North Carolina.

Appendix A

Field Photographs

MAUL FOSTER ALONGI

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photos from VOC Inventory–March 8, 2023

Photo No. 1.

Description

(a) Building and Location
Shop Building – storage room near restroom

(b) Material or Chemical of Concern
Flammables cabinet

(c) Est. Quantity and Description
Multiple cans of spray paints and solvents

(d) PID Reading
5.1 ppm (open) , 0.3 ppm (closed)

(e) Action Before Sampling
Closed cabinet and left in place – closed storage room door and sealed as described in Photo No. 3 below

Photo No. 2.

Description

(a) Building and Location
Shop Building – storage room near restroom

(b) Material or Chemical of Concern
Storage shelf near flammables cabinet

(c) Est. Quantity and Description
Multiple greasy parts, caulk tubes, greasy coveralls

(d) PID Reading
0.1 ppm

(e) Action Before Sampling
Left in place – closed storage room door and sealed as described in Photo No. 3 below

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 3.

Description

(a) Building and Location
Shop Building – storage room near restroom

(b) Material or Chemical of Concern
n/a

(c) Est. Quantity and Description
n/a

(d) PID Reading
0.0 ppm (closed door)

(e) Action Before Sampling
Storage room closed and sealed around perimeter; doorknob penetration with zero-VOC masking tape

Photo No. 4.

Description

(a) Building and Location
Shop Building – hallway near restroom

(b) Material or Chemical of Concern
2-part spray foam—"A Component" material and applicator

(c) Est. Quantity and Description
20# pressurized cylinder

(d) PID Reading
0.0 ppm

(e) Action Before Sampling
Removed from area

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 5.

Description

(a) Building and Location
Shop Building – hallway near restroom

(b) Material or Chemical of Concern
2-part spray foam—"B Component" material and applicator

(c) Est. Quantity and Description
20# pressurized cylinder

(d) PID Reading
0.0 ppm

(e) Action Before Sampling
Removed from area

Photo No. 6.

Description

(a) Building and Location
Various areas throughout all buildings

(b) Material or Chemical of Concern
General storage of greasy parts

(c) Est. Quantity and Description
Various

(d) PID Reading
Readings not above backgrounds in their specific areas

(e) Action Before Sampling
Infeasible to move or isolate all parts from sampling, performed sampling as feasible away from parts storage areas

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 7.

Description

(a) Building and Location
Shop building—west wall near bolt storage and welders

(b) Material or Chemical of Concern
Unknown material on motor of decommissioned compressor

(c) Est. Quantity and Description
Unknown

(d) PID Reading
25.0 ppm

(e) Action Before Sampling
Isolated motor of compressor from sampling area with plastic sheeting and tape

Photo No. 8.

Description

(a) Building and Location
Shop Building—west wall on welder

(b) Material or Chemical of Concern
Rubberized undercoating material

(c) Est. Quantity and Description
Three spray cans

(d) PID Reading
5.9 ppm

(e) Action Before Sampling
Discarded spent cans and dirty materials.

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 9.

Description

(a) Building and Location
Shop Building—Active work area in center of building

(b) Material or Chemical of Concern
Denco Brake & Parts Cleaner

(c) Est. Quantity and Description
13 oz spray cans

(d) PID Reading
1,000+ ppm in work area (sample taken while worker was using material)

(e) Action Before Sampling
Moved unspent cans to flammables cabinet and or out of sampling areas, discarded spent cans

Photo No. 10.

Description

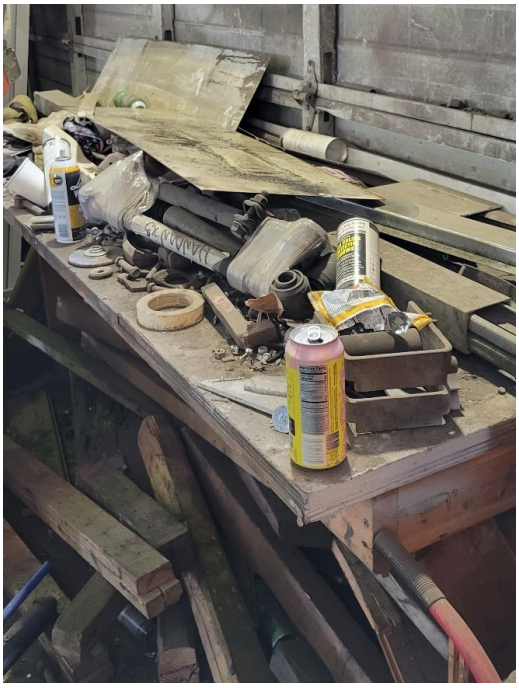
(a) Building and Location
Shop Building—bench on north wall

(b) Material or Chemical of Concern
Multiple spray cans and clutter

(c) Est. Quantity and Description
Various

(d) PID Reading
35.5 ppm

(e) Action Before Sampling
Dirty rags, spent and unspent spray cans, and other potential sources removed from bench and area.



Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 11.

Description

(a) Building and Location
All buildings—movable trash cans

(b) Material or Chemical of Concern
Various

(c) Est. Quantity and Description
Various

(d) PID Reading
0.0-23.9 ppm (dependent on can and contents)

(e) Action Before Sampling
Moved all trash cans outside

Photo No. 12.

Description

(a) Building and Location
Shop Building—central on west wall

(b) Material or Chemical of Concern
TremPro 640 adhesive

(c) Est. Quantity and Description
1 gallon can (partial fill)

(d) PID Reading
5.6 ppm

(e) Action Before Sampling
Moved from sampling area, ensured that no similar materials had accumulated since inventory.

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 13.

Description

(a) Building and Location
Quonset hut—Vapor pin TWA-SV-40

(b) Material or Chemical of Concern
Spilled spray foam and cleanup product

(c) Est. Quantity and Description
Unknown

(d) PID Reading
0.0 ppm

(e) Action Before Sampling
No damage to vapor pin. No action needed

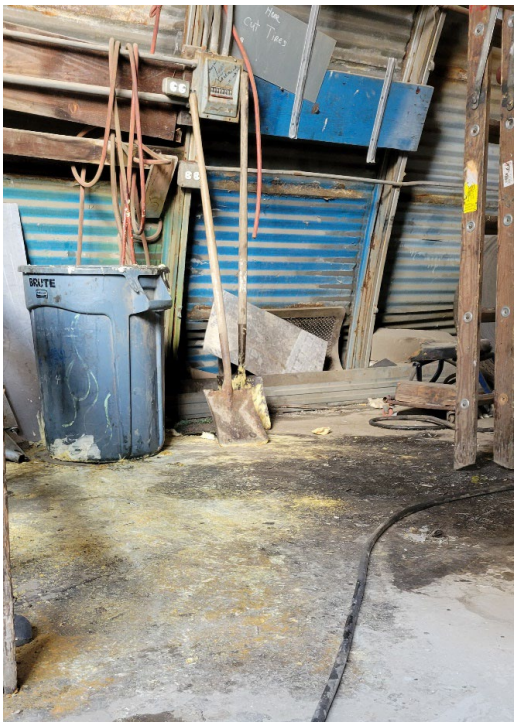


Photo No. 14.

Description

(a) Building and Location
Quonset hut 1—northeast corner

(b) Material or Chemical of Concern
Large air compressor

(c) Est. Quantity and Description
n/a

(d) PID Reading
0.0 ppm

(e) Action Before Sampling
Per Photo No. 7 above, confirmation that other compressors are not VOC sources. No action needed.

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 15.

Description

(a) Building and Location
Quonset Hut 1—east wall (movable)

(b) Material or Chemical of Concern
Oxypropane torch

(c) Est. Quantity and Description
50-pound cylinder (valves closed)

(d) PID Reading
0.0 ppm

(e) Action Before Sampling
Ensured valves were closed and left in place

Photo No. 16.

Description

(a) Building and Location
Quonset Hut 2—SW storage area

(b) Material or Chemical of Concern
Flammables cabinet

(c) Est. Quantity and Description
Multiple cans of spray paints and solvents

(d) PID Reading
0.7 ppm (open)
0.0 ppm (closed)

(e) Action Before Sampling
Closed cabinet, sealed door seams with zero-VOC masking tape, and left in place

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Field Photos from Sampling – June 11-12, 2023

Photo No. 17.

Description

Closed cabinet from Photo No. 16, sealed with zero-VOC masking tape.

Photo No. 18.

Description

PID reading at north bench in Shop Building (see Photo No. 10) after removing spent spray cans and other refuse.

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 19.

Description

Trash cans moved outdoors prior to indoor air sampling. All located away from ambient air sampling locations.

Photo No. 20.

Description

TWA-AA-03 ambient air sample location and sampling height. Sampling heights for all ambient and indoor air samples were near this height.

Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 21.

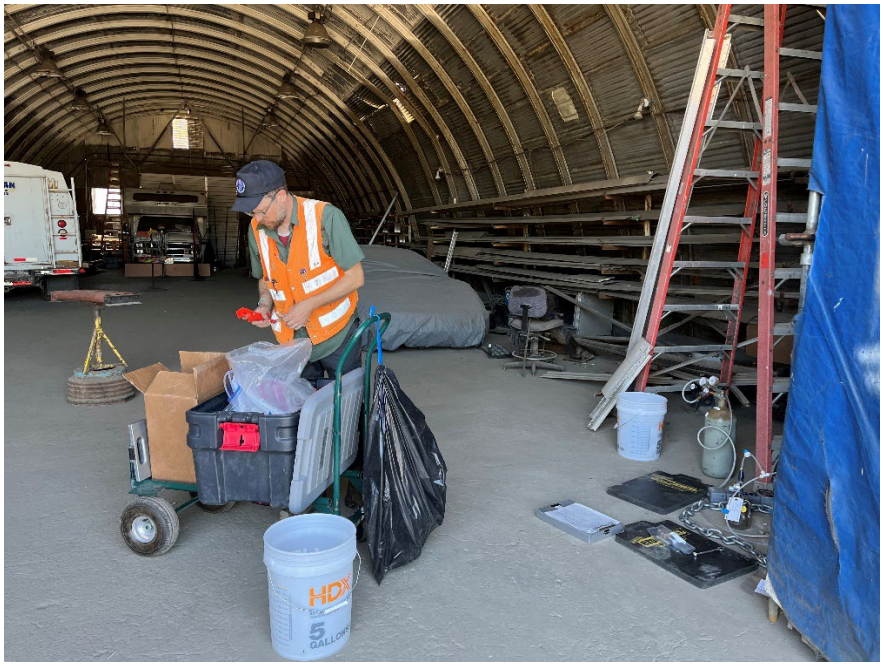
Description

TWA-IA-01 indoor air sampling location—showing both parent and duplicate canisters. One of three indoor stored vehicles shown in background.

Photo No. 22.

Description

Preparing for sub-slab vapor sampling at TWA-SV-35. All three indoor stored vehicles shown in background.



Photographs

Project Name: Tier II Vapor Intrusion Assessment Report
Project Number: M0615.20.006
Location: 1801 E Alexander Avenue, Tacoma, Washington

Photo No. 23.

Description

Example of general clutter, soiled materials, and concrete staining seen in the Shop Building.

Appendix B

Field Sampling Data Sheets

MAUL FOSTER ALONGI

Sampler(s): Amanda Bixby, Derek Heitz

Indoor Air and Soil Vapor Sampling Data Sheet
Potter Property—Port of Tacoma
1801 Alexander Avenue, Tacoma, Washington

MAUL FOSTER ALONGI

Sample ID	Matrix	Date	Shut-in Test Pass/ Fail	Summa Canister ID	Manifold ID	Canister Size (L)	Purge				Helium		Sample			
							Begin Time	End Time	Volume (L)	Helium (ppm)	Indoor Ambient Air (ppm)	Under Shroud (%) (ideal = 40)	Begin Time	End Time	Initial Pressure ("Hg)	Final Pressure ("Hg)
TWA-SV-35-061223	SS	6/12/23	Pass	9893	66	1	14:41	14:46	1	0	0	47.2	14:50	14:55	-30+	-5
TWA-SV-36-061223	SS	6/12/23	Pass	9882	52	1	15:25	15:30	1	0	0	50.3	15:31	15:36	-30	-5
TWA-SV-41-061223	SS	6/12/23	Pass	8533	55	1	10:24	10:29	1	0	0	54.6	10:33	10:38	-29.5	-5
TWA-SV-DUP-061223	SS	6/12/23	Pass	9987	241	1	10:24	10:29	1	0	0	54.6	10:33	10:38	-30+	-5
TWA-SV-42-061223	SS	6/12/23	Pass	8207	301	1	12:32	12:37	1	50	0	53.6	12:39	12:44	-29.5	-5
TWA-SV -43-061223	SS	6/12/23	Pass	8527	70	1	9:22	9:27	1	0	0	64.5	9:32	9:36	-29	-5
TWA-SV-44-061223	SS	6/12/23	Pass	8255	64	1	11:53	11:58	1	425	0	40.6	11:59	12:04	-29	-5
TWA-SV-45-061223	SS	6/12/23	Pass	9563	68	1	13:40	13:45	1	0	0	53	13:46	13:51	-30+	-5
TWA-IA-01-061123	IA	6/11/23	NA	18567	7845	6	NA						8:30	16:46	-29	-6
TWA-IA-02-061123	IA	6/11/23	NA	40703	6601	6	NA						8:33	16:41	-30	-9.5
TWA-IA-03-061123	IA	6/11/23	NA	40705	5348	6	NA						8:41	16:51	-30+	-7
TWA-IA-04-061123	IA	6/11/23	NA	20541	8183	6	NA						9:07	16:58	-30+	-9
TWA-IA-05-061123	IA	6/11/23	NA	23227	5356	6	NA						9:23	17:18	-30	-8
TWA-IA-06-061123	IA	6/11/23	NA	20551	7847	6	NA						9:27	17:21	-30+	-9

Sampler(s): Amanda Bixby, Derek Heitz

Indoor Air and Soil Vapor Sampling Data Sheet
Potter Property—Port of Tacoma
1801 Alexander Avenue, Tacoma, Washington

Sample ID	Matrix	Date	Shut-in Test Pass/ Fail	Summa Canister ID	Manifold ID	Canister Size (L)	Purge				Helium		Sample			
							Begin Time	End Time	Volume (L)	Helium (ppm)	Indoor Ambient Air (ppm)	Under Shroud (%) (ideal = 40)	Begin Time	End Time	Initial Pressure ("Hg)	Final Pressure ("Hg)
TWA-IA-DUP-061123	IA	6/11/23	NA	20555	5354	6	NA						8:26	16:47	-28	-9.5
TWA-AA-02-061123	AA	6/11/23	NA	23229	07850	6	NA						7:46	15:53	-29	-11
TWA-AA-06-061123	AA	6/11/23	NA	37089	05347	6	NA						8:11	16:07	-30+	-7

Notes:

To avoid data rejection during validation, the amount of helium in the sample must be less than 5% of the helium concentration under the shroud. For example, if there is 50% helium in the shroud, your sample may contain up to 2.5%, (25,000 ppm) helium.

1% = 10,000 ppm.

"Hg = inches of mercury.

AA = ambient air.

IA = indoor air.

ID = identification.

L = liter.

NA = not applicable.

ppm = parts per million.

SS = sub-slab vapor.

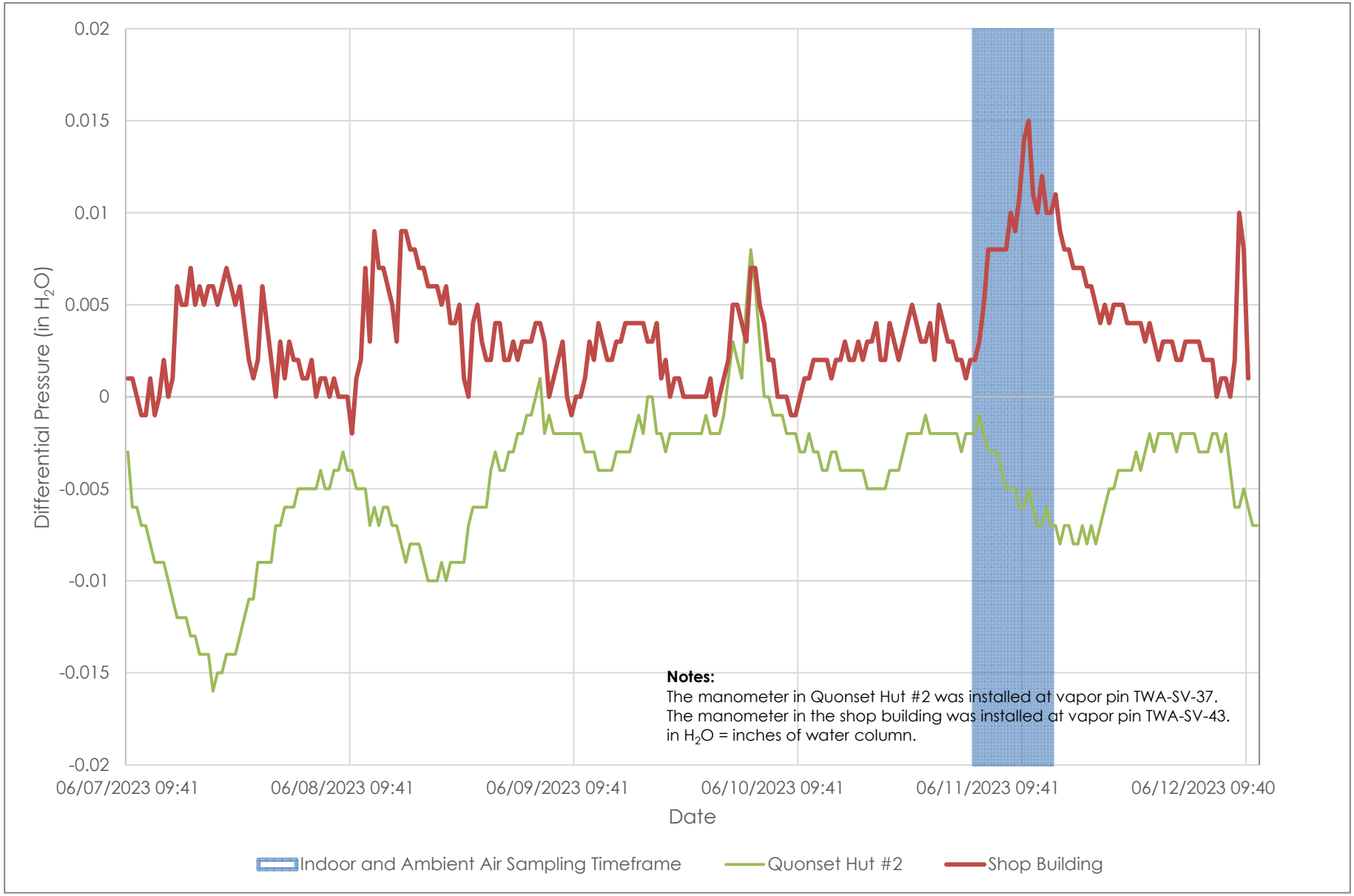
Appendix C

Manometer Readings

MAUL FOSTER ALONGI

MAUL FOSTER ALONGI

Appendix C—Manometer Readings Chart
Shop Building and Quonset Hut #2
Port of Tacoma, Former Potter Property
1801 Alexander Avenue, Tacoma, Washington



M0615.20.006, 8/23/2023, Tf_June 2023 manometer data

Appendix D

Analytical Laboratory Reports

MAUL FOSTER ALONGI

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 23, 2023

Audrey Hackett, Project Manager
Maul Foster Alongi
2815 2nd Ave, Suite 540
Seattle, WA 98121

Dear Ms Hackett:

Included are the results from the testing of material submitted on June 12, 2023 from the Potter Air Sampling M0615.20.006, F&BI 306187 project. There are 27 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
MFA0623R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 12, 2023 by Friedman & Bruya, Inc. from the Maul Foster Alongi Potter Air Sampling M0615.20.006, F&BI 306187 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
306187 -01	TWA-IA-01-061123
306187 -02	TWA-IA-02-061123
306187 -03	TWA-IA-03-061123
306187 -04	TWA-IA-04-061123
306187 -05	TWA-IA-05-061123
306187 -06	TWA-IA-06-061123
306187 -07	TWA-IA-DUP-061123
306187 -08	TWA-AA-01-061123
306187 -09	TWA-AA-02-061123
306187 -10	TWA-AA-03-061123
306187 -11	TWA-AA-04-061123
306187 -12	TWA-AA-05-061123
306187 -13	TWA-AA-06-061123
306187 -14	TWA-AA-07-061123
306187 -15	TWA-AA-08-061123

Non-petroleum compounds identified in the air phase hydrocarbon (APH) ranges were subtracted per the MA-APH method.

Naphthalene was detected in the TO-15 method blank at a level greater than one tenth the concentration detected in the samples. The data were flagged accordingly.

The TO-15 propene calibration standard exceeded the acceptance criteria. The compound was not detected, therefore the result did not represent an out of control condition.

All other quality control requirements were acceptable.

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-IA-01-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-01
Date Analyzed:	06/16/23	Data File:	061524.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	130
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-IA-02-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-02
Date Analyzed:	06/16/23	Data File:	061523.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	180
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-IA-03-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-03
Date Analyzed:	06/16/23	Data File:	061522.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	100
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-IA-04-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-04
Date Analyzed:	06/16/23	Data File:	061521.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	93
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-IA-05-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-05
Date Analyzed:	06/15/23	Data File:	061520.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	120
APH EC9-12 aliphatics	94
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-IA-06-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-06
Date Analyzed:	06/15/23	Data File:	061519.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	100
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-IA-DUP-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-07
Date Analyzed:	06/15/23	Data File:	061518.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	140
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-AA-02-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-09
Date Analyzed:	06/15/23	Data File:	061517.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	96
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-AA-06-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-13
Date Analyzed:	06/15/23	Data File:	061516.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	140
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Potter Air Sampling M0615.20.006
Date Collected:	Not Applicable	Lab ID:	03-1443 MB
Date Analyzed:	06/15/23	Data File:	061515.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<75
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-IA-01-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-01
Date Analyzed:	06/16/23	Data File:	061524.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	89	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.3	0.47	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	8.9	3.7	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	11	5.9	Toluene	<7.5	<2
Acrolein	0.17	0.074	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	7.8	2.6	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	13	5.7	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	0.11	0.022	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	0.069	0.017	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.45	0.072	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	0.39	0.12	Naphthalene	0.074 j fb	0.014 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-IA-02-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-02
Date Analyzed:	06/16/23	Data File:	061523.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.4	0.49	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	21	9.0	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	16	8.3	Toluene	<7.5	<2
Acrolein	0.2	0.088	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	14	4.7	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	15	6.2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	1.2	0.27
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	3.9	1.1	Bromoform	<2.1	<0.2
Chloroform	0.11	0.023	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.45	0.072	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	0.67	0.21	Naphthalene	0.084 j fb	0.016 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-IA-03-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-03
Date Analyzed:	06/16/23	Data File:	061522.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.2	0.45	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	9.6	5.1	Toluene	<7.5	<2
Acrolein	0.19	0.081	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	13	5.7	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	0.1	0.021	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	0.065	0.016	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.45	0.071	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	0.095 j fb	0.018 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-IA-04-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-04
Date Analyzed:	06/16/23	Data File:	061521.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.1	0.43	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	8.8	4.6	Toluene	<7.5	<2
Acrolein	0.2	0.087	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	10	4.4	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	0.098	0.020	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	0.069	0.017	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.45	0.072	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	0.11 j fb	0.020 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-IA-05-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-05
Date Analyzed:	06/15/23	Data File:	061520.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.1	0.43	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	9	4.8	Toluene	<7.5	<2
Acrolein	0.26	0.11	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	15	6.3	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	1.0	0.24
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	0.11	0.022	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	0.073	0.018	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.47	0.074	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	0.14 j fb	0.027 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-IA-06-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-06
Date Analyzed:	06/15/23	Data File:	061519.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.4	0.48	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	9.4	5.0	Toluene	<7.5	<2
Acrolein	0.26	0.11	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	14	6.0	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	1.3	0.30
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	0.53	0.12
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	0.098	0.020	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	0.073	0.018	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.47	0.075	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	0.17 j fb	0.032 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-IA-DUP-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-07
Date Analyzed:	06/15/23	Data File:	061518.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.2	0.45	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	8.2	3.4	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	11	5.9	Toluene	<7.5	<2
Acrolein	0.13	0.055	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	7.4	2.5	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	9.7	4.1	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	0.11	0.022	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	0.049	0.012	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.46	0.073	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	0.38	0.12	Naphthalene	0.11 j fb	0.021 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-AA-02-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-09
Date Analyzed:	06/15/23	Data File:	061517.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	2.4	0.49	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5	<4	Toluene	<7.5	<2
Acrolein	0.39	0.17	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	13	5.5	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	0.098	0.020	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	0.069	0.017	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	0.45	0.071	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	0.12 j fb	0.022 j fb
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-AA-06-061123	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/11/23	Lab ID:	306187-13 1/1.2
Date Analyzed:	06/20/23	Data File:	062013.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	88	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.4	<0.84	1,2-Dichloropropane	<0.28	<0.06
Dichlorodifluoromethane	2.3	0.47	1,4-Dioxane	<0.43	<0.12
Chloromethane	<4.5	<2.2	2,2,4-Trimethylpentane	<5.6	<1.2
F-114	<2.5	<0.36	Methyl methacrylate	<4.9	<1.2
Vinyl chloride	<0.31	<0.12	Heptane	<4.9	<1.2
1,3-Butadiene	<0.053	<0.024	Bromodichloromethane	<0.08	<0.012
Butane	<5.7	<2.4	Trichloroethene	<0.13	<0.024
Bromomethane	<4.7	<1.2	cis-1,3-Dichloropropene	<1.1	<0.24
Chloroethane	<3.2	<1.2	4-Methyl-2-pentanone	<9.8	<2.4
Vinyl bromide	<0.52	<0.12	trans-1,3-Dichloropropene	<0.54	<0.12
Ethanol	<9	<4.8	Toluene	<9	<2.4
Acrolein	0.3	0.13	1,1,2-Trichloroethane	<0.065	<0.012
Pentane	<7.1	<2.4	2-Hexanone	<4.9	<1.2
Trichlorofluoromethane	<2.7	<0.48	Tetrachloroethene	<8.1	<1.2
Acetone	14	5.7	Dibromochloromethane	<0.1	<0.012
2-Propanol	<10	<4.2	1,2-Dibromoethane (EDB)	<0.092	<0.012
1,1-Dichloroethene	<0.48	<0.12	Chlorobenzene	<0.55	<0.12
trans-1,2-Dichloroethene	<0.48	<0.12	Ethylbenzene	<0.52	<0.12
Methylene chloride	<42	<12	1,1,2,2-Tetrachloroethane	<0.16	<0.024
t-Butyl alcohol (TBA)	<15	<4.8	Nonane	<6.3	<1.2
3-Chloropropene	<3.8	<1.2	Isopropylbenzene	<12	<2.4
CFC-113	<1.8	<0.24	2-Chlorotoluene	<6.2	<1.2
Carbon disulfide	<7.5	<2.4	Propylbenzene	<5.9	<1.2
Methyl t-butyl ether (MTBE)	<8.7	<2.4	4-Ethyltoluene	<5.9	<1.2
Vinyl acetate	<8.5	<2.4	m,p-Xylene	<1	<0.24
1,1-Dichloroethane	<0.49	<0.12	o-Xylene	<0.52	<0.12
cis-1,2-Dichloroethene	<0.48	<0.12	Styrene	<1	<0.24
Hexane	<4.2	<1.2	Bromoform	<2.5	<0.24
Chloroform	0.11	0.022	Benzyl chloride	<0.062	<0.012
Ethyl acetate	<8.6	<2.4	1,3,5-Trimethylbenzene	<5.9	<1.2
Tetrahydrofuran	<0.71	<0.24	1,2,4-Trimethylbenzene	<5.9	<1.2
2-Butanone (MEK)	<7.1	<2.4	1,3-Dichlorobenzene	<0.72	<0.12
1,2-Dichloroethane (EDC)	<0.049	<0.012	1,4-Dichlorobenzene	<0.27	<0.046
1,1,1-Trichloroethane	<0.65	<0.12	1,2-Dichlorobenzene	<0.72	<0.12
Carbon tetrachloride	0.46	0.073	1,2,4-Trichlorobenzene	<0.89	<0.12
Benzene	0.22 j	0.068 j	Naphthalene	0.082 j ca fb	0.016jcafb
Cyclohexane	<8.3	<2.4	Hexachlorobutadiene	<0.26	<0.024

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Potter Air Sampling M0615.20.006
Date Collected:	Not Applicable	Lab ID:	03-1443 MB
Date Analyzed:	06/15/23	Data File:	061515.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2 k	<0.7 k	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	<0.99	<0.2	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044	<0.02	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5	<4	Toluene	<7.5	<2
Acrolein	<0.11	<0.05	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	<4.8	<2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	<0.049	<0.01	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	<0.31	<0.05	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.16 j	<0.05 j	Naphthalene	0.068 j lc	0.013 j lc
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Date of Report: 06/23/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306187

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: 306187-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
APH EC5-8 aliphatics	ug/m3	140	130	7
APH EC9-12 aliphatics	ug/m3	<25	<25	nm
APH EC9-10 aromatics	ug/m3	<25	<25	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	67	104	70-130
APH EC9-12 aliphatics	ug/m3	67	127	70-130
APH EC9-10 aromatics	ug/m3	67	99	70-130

Date of Report: 06/23/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306187

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 306187-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Propene	ug/m3	<1.2	<1.2	nm
Dichlorodifluoromethane	ug/m3	2.3	1.9	19
Chloromethane	ug/m3	<3.7	<3.7	nm
F-114	ug/m3	<2.1	<2.1	nm
Vinyl chloride	ug/m3	<0.26	<0.26	nm
1,3-Butadiene	ug/m3	<0.044	<0.044	nm
Butane	ug/m3	8.9	8.3	7
Bromomethane	ug/m3	<3.9	<3.9	nm
Chloroethane	ug/m3	<2.6	<2.6	nm
Vinyl bromide	ug/m3	<0.44	<0.44	nm
Ethanol	ug/m3	11	11	0
Acrolein	ug/m3	0.17	<0.11	nm
Pentane	ug/m3	7.8	7.4	5
Trichlorofluoromethane	ug/m3	<2.2	<2.2	nm
Acetone	ug/m3	13	8.3	44 vo
2-Propanol	ug/m3	<8.6	<8.6	nm
1,1-Dichloroethene	ug/m3	<0.4	<0.4	nm
trans-1,2-Dichloroethene	ug/m3	<0.4	<0.4	nm
Methylene chloride	ug/m3	<35	<35	nm
t-Butyl alcohol (TBA)	ug/m3	<12	<12	nm
3-Chloropropene	ug/m3	<3.1	<3.1	nm
CFC-113	ug/m3	<1.5	<1.5	nm
Carbon disulfide	ug/m3	<6.2	<6.2	nm
Methyl t-butyl ether (MTBE)	ug/m3	<7.2	<7.2	nm
Vinyl acetate	ug/m3	<7	<7	nm
1,1-Dichloroethane	ug/m3	<0.4	<0.4	nm
cis-1,2-Dichloroethene	ug/m3	<0.4	<0.4	nm
Hexane	ug/m3	<3.5	<3.5	nm
Chloroform	ug/m3	0.11	0.11	0
Ethyl acetate	ug/m3	<7.2	<7.2	nm
Tetrahydrofuran	ug/m3	<0.59	<0.59	nm
2-Butanone (MEK)	ug/m3	<5.9	<5.9	nm
1,2-Dichloroethane (EDC)	ug/m3	0.069	<0.04	nm
1,1,1-Trichloroethane	ug/m3	<0.55	<0.55	nm
Carbon tetrachloride	ug/m3	0.45	0.44	2
Benzene	ug/m3	0.39	0.38	3
Cyclohexane	ug/m3	<6.9	<6.9	nm
1,2-Dichloropropane	ug/m3	<0.23	<0.23	nm
1,4-Dioxane	ug/m3	<0.36	<0.36	nm
2,2,4-Trimethylpentane	ug/m3	<4.7	<4.7	nm

Date of Report: 06/23/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306187

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 306187-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Methyl methacrylate	ug/m3	<4.1	<4.1	nm
Heptane	ug/m3	<4.1	<4.1	nm
Bromodichloromethane	ug/m3	<0.067	<0.067	nm
Trichloroethene	ug/m3	<0.11	<0.11	nm
cis-1,3-Dichloropropene	ug/m3	<0.91	<0.91	nm
4-Methyl-2-pentanone	ug/m3	<8.2	<8.2	nm
trans-1,3-Dichloropropene	ug/m3	<0.45	<0.45	nm
Toluene	ug/m3	<7.5	<7.5	nm
1,1,2-Trichloroethane	ug/m3	<0.055	<0.055	nm
2-Hexanone	ug/m3	<4.1	<4.1	nm
Tetrachloroethene	ug/m3	<6.8	<6.8	nm
Dibromochloromethane	ug/m3	<0.085	<0.085	nm
1,2-Dibromoethane (EDB)	ug/m3	<0.077	<0.077	nm
Chlorobenzene	ug/m3	<0.46	<0.46	nm
Ethylbenzene	ug/m3	<0.43	<0.43	nm
1,1,2,2-Tetrachloroethane	ug/m3	<0.14	<0.14	nm
Nonane	ug/m3	<5.2	<5.2	nm
Isopropylbenzene	ug/m3	<9.8	<9.8	nm
2-Chlorotoluene	ug/m3	<5.2	<5.2	nm
Propylbenzene	ug/m3	<4.9	<4.9	nm
4-Ethyltoluene	ug/m3	<4.9	<4.9	nm
m,p-Xylene	ug/m3	<0.87	<0.87	nm
o-Xylene	ug/m3	<0.43	<0.43	nm
Styrene	ug/m3	<0.85	<0.85	nm
Bromoform	ug/m3	<2.1	<2.1	nm
Benzyl chloride	ug/m3	<0.052	<0.052	nm
1,3,5-Trimethylbenzene	ug/m3	<4.9	<4.9	nm
1,2,4-Trimethylbenzene	ug/m3	<4.9	<4.9	nm
1,3-Dichlorobenzene	ug/m3	<0.6	<0.6	nm
1,4-Dichlorobenzene	ug/m3	<0.23	<0.23	nm
1,2-Dichlorobenzene	ug/m3	<0.6	<0.6	nm
1,2,4-Trichlorobenzene	ug/m3	<0.74	<0.74	nm
Naphthalene	ug/m3	<0.26	<0.26	nm
Hexachlorobutadiene	ug/m3	<0.21	<0.21	nm

Date of Report: 06/23/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306187

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Propene	ug/m3	23	134 vo	70-130
Dichlorodifluoromethane	ug/m3	67	114	70-130
Chloromethane	ug/m3	28	111	70-130
F-114	ug/m3	94	118	70-130
Vinyl chloride	ug/m3	35	107	70-130
1,3-Butadiene	ug/m3	30	97	70-130
Butane	ug/m3	32	111	70-130
Bromomethane	ug/m3	52	106	70-130
Chloroethane	ug/m3	36	113	70-130
Vinyl bromide	ug/m3	59	99	70-130
Ethanol	ug/m3	25	113	70-130
Acrolein	ug/m3	31	87	70-130
Pentane	ug/m3	40	97	70-130
Trichlorofluoromethane	ug/m3	76	121	70-130
Acetone	ug/m3	32	101	70-130
2-Propanol	ug/m3	33	91	70-130
1,1-Dichloroethene	ug/m3	54	101	70-130
trans-1,2-Dichloroethene	ug/m3	54	99	70-130
Methylene chloride	ug/m3	94	111	70-130
t-Butyl alcohol (TBA)	ug/m3	41	100	70-130
3-Chloropropene	ug/m3	42	108	70-130
CFC-113	ug/m3	100	116	70-130
Carbon disulfide	ug/m3	42	111	70-130
Methyl t-butyl ether (MTBE)	ug/m3	49	91	70-130
Vinyl acetate	ug/m3	48	97	70-130
1,1-Dichloroethane	ug/m3	55	113	70-130
cis-1,2-Dichloroethene	ug/m3	54	93	70-130
Hexane	ug/m3	48	92	70-130
Chloroform	ug/m3	66	108	70-130
Ethyl acetate	ug/m3	49	108	70-130
Tetrahydrofuran	ug/m3	40	97	70-130
2-Butanone (MEK)	ug/m3	40	93	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	113	70-130
1,1,1-Trichloroethane	ug/m3	74	111	70-130
Carbon tetrachloride	ug/m3	85	111	70-130
Benzene	ug/m3	43	95	70-130
Cyclohexane	ug/m3	46	80	70-130
1,2-Dichloropropane	ug/m3	62	120	70-130
1,4-Dioxane	ug/m3	49	94	70-130
2,2,4-Trimethylpentane	ug/m3	63	106	70-130

Date of Report: 06/23/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306187

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl methacrylate	ug/m3	55	117	70-130
Heptane	ug/m3	55	110	70-130
Bromodichloromethane	ug/m3	90	124	70-130
Trichloroethene	ug/m3	73	115	70-130
cis-1,3-Dichloropropene	ug/m3	61	114	70-130
4-Methyl-2-pentanone	ug/m3	55	89	70-130
trans-1,3-Dichloropropene	ug/m3	61	108	70-130
Toluene	ug/m3	51	85	70-130
1,1,2-Trichloroethane	ug/m3	74	119	70-130
2-Hexanone	ug/m3	55	116	70-130
Tetrachloroethene	ug/m3	92	114	70-130
Dibromochloromethane	ug/m3	120	114	70-130
1,2-Dibromoethane (EDB)	ug/m3	100	109	70-130
Chlorobenzene	ug/m3	62	108	70-130
Ethylbenzene	ug/m3	59	87	70-130
1,1,2,2-Tetrachloroethane	ug/m3	93	114	70-130
Nonane	ug/m3	71	105	70-130
Isopropylbenzene	ug/m3	66	97	70-130
2-Chlorotoluene	ug/m3	70	94	70-130
Propylbenzene	ug/m3	66	100	70-130
4-Ethyltoluene	ug/m3	66	92	70-130
m,p-Xylene	ug/m3	120	86	70-130
o-Xylene	ug/m3	59	93	70-130
Styrene	ug/m3	58	93	70-130
Bromoform	ug/m3	140	102	70-130
Benzyl chloride	ug/m3	70	110	70-130
1,3,5-Trimethylbenzene	ug/m3	66	96	70-130
1,2,4-Trimethylbenzene	ug/m3	66	93	70-130
1,3-Dichlorobenzene	ug/m3	81	109	70-130
1,4-Dichlorobenzene	ug/m3	81	103	70-130
1,2-Dichlorobenzene	ug/m3	81	106	70-130
1,2,4-Trichlorobenzene	ug/m3	100	88	70-130
Naphthalene	ug/m3	71	76	70-130
Hexachlorobutadiene	ug/m3	140	106	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

306187

SAMPLE CHAIN OF CUSTODY

06/16/23

Page # 1 of 2

Report To Audrey Hackett

Company Maul Foster & Alongi

Address 2815 2nd Ave Ste 540

City, State, ZIP Seattle WA 98121

Phone 206-331-1535 Email ahackett@maulfoster.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Potter Air Sampling

PO #: MD615.23.006

NOTES:

INVOICE TO: accounting@maulfoster.com

TURNAROUND TIME: Standard / RUSH

Rush charges authorized by:

SAMPLE DISPOSAL: Default: Clean following final report delivery / Hold (Fee may apply):

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs DH	APH	Helium		Notes
TWA-IA-01-061123	01	18567	07515	[IA] / SG	6-11-23	29	0830	6	1646	X		X	X			
TWA-IA-02-061123	02	40703	06601	[IA] / SG	6-11-23	30	0833	9.5	1641	X		X	X			
TWA-IA-03-061123	03	40705	05345	[IA] / SG	6-11-23	30+	0841	7	1651	X		X	X			
TWA-IA-04-061123	04	20541	05183	[IA] / SG	6-11-23	30+	0907	9	1658	X		X	X			Gauge damaged
TWA-IA-05-061123	05	23227	05356	[IA] / SG	6-11-23	30	0923	8	1718	X		X	X			
TWA-IA-06-061123	06	20551	07547	[IA] / SG	6-11-23	30+	0927	9	1721	X		X	X			
TWA-IA-DUP-061123	07	20555	05354	[IA] / SG	6-11-23	28	0826	9.5	1647	X		X	X			
				IA / SG												

Friedman & Bruya, Inc.
5500 4th Avenue South
Seattle, WA 98108
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Derek Heitz	MFA	6/12/23	1315
Received by:		FBI	6/12/23	1315
Relinquished by:			6-13-23	
Received by:				

Samples received at 22 °C

FORMS\COC\COCTO-15.DOC

SAMPLE CHAIN OF CUSTODY

~~306187~~ 06/12/23

Page # 1 of 2

Report To Audrey Hackett
Company Maul Foster & Alongi
Address 2815 2nd Ave Ste 540
City, State, ZIP Seattle WA 98121
Phone 206-221-1875 Email ahackett@maulfoster.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Potter Air Sampling

PO #: M0615.20.006

NOTES:

INVOICE TO: accounting@maulfoster.com

TURNAROUND TIME: Standard / RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Default: Clean following final report delivery
Hold (Fee may apply):

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium		per AB 6/13/23 Notes
TWA-AA-01-061123	08	37203	13966	IA / SG	06-11-23	30	0741	10	1557	X		DH X	X			hold
TWA-AA-02-061123	09	23229	07550	IA / SG	06-11-23	29	0746	11	1553	X		X	X			analyze
TWA-AA-03-061123	10	40711	07551	IA / SG	06-11-23	29.5	0748	6.5	1556	X		X	X			hold
TWA-AA-04-061123	11	40704	07552	IA / SG	06-11-23	27	0803	3.5	1601	X		X	X			hold
TWA-AA-05-061123	12	40707	06603	IA / SG	06-11-23	30	0806	4	1603	X		X	X			hold
TWA-AA-06-061123	13	37089	05347	IA / SG	06-11-23	30+	0811	7	1607	X		X	X			analyze
TWA-AA-07-061123	14	23234	05352	IA / SG	06-11-23	30+	0816	7	1611	X		X	X			hold
TWA-AA-08-061123	15	20519	07571	IA / SG	06-11-23	27.5	0822	6	1620	X		X	X			hold

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	DH	Derek Heitz	MFA	6-12-23	1315
Received by:		VINH	FBI	6-12-23	1315
Relinquished by:					
Received by:			Samples received at 22 °C		

Friedman & Bruya, Inc.
5500 4th Avenue South
Seattle, WA 98108
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COCTO-15.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 26, 2023

Audrey Hackett, Project Manager
Maul Foster Alongi
2815 2nd Ave, Suite 540
Seattle, WA 98121

Dear Ms Hackett:

Included are the amended results and invoice from the testing of material submitted on June 12, 2023 from the Potter Air Sampling M0615.20.006, F&BI 306188 project. The helium for TWA-SV-44-061223 was removed.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Amanda Bixby
MFA0627R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 27, 2023

Audrey Hackett, Project Manager
Maul Foster Alongi
2815 2nd Ave, Suite 540
Seattle, WA 98121

Dear Ms Hackett:

Included are the results from the testing of material submitted on June 12, 2023 from the Potter Air Sampling M0615.20.006, F&BI 306188 project. There are 21 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Amanda Bixby
MFA0627R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 12, 2023 by Friedman & Bruya, Inc. from the Maul Foster Alongi Potter Air Sampling M0615.20.006, F&BI 306188 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
306188 -01	TWA-SV-43-061223
306188 -02	TWA-SV-41-061223
306188 -03	TWA-SV-DUP-061223
306188 -04	TWA-SV-44-061223
306188 -05	TWA-SV-42-061223

The samples were sent to Fremont Analytical for major gases analysis. The report is enclosed.

The TO-15 ethanol laboratory control sample exceeded the acceptance criteria. The compound was not detected, therefore the result did no represent an out of control condition.

The tetrachloroethene concentration in samples TWA-SV-41-061223, TWA-SV-DUP-061223, and TWA-SV-44-061223 exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-43-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-01 1/8.1
Date Analyzed:	06/17/23	Data File:	061624.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	840
APH EC9-12 aliphatics	<200
APH EC9-10 aromatics	<200

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-41-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-02 1/16
Date Analyzed:	06/17/23	Data File:	061625a.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<1,200
APH EC9-12 aliphatics	<400
APH EC9-10 aromatics	<400

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-DUP-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-03 1/16
Date Analyzed:	06/17/23	Data File:	061626a.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<1,200
APH EC9-12 aliphatics	<400
APH EC9-10 aromatics	<400

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-44-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-04 1/17
Date Analyzed:	06/17/23	Data File:	061627b.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<1,300
APH EC9-12 aliphatics	<420
APH EC9-10 aromatics	<420

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-42-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-05 1/16
Date Analyzed:	06/17/23	Data File:	061628b.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<1,200
APH EC9-12 aliphatics	<400
APH EC9-10 aromatics	<400

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Potter Air Sampling M0615.20.006
Date Collected:	Not Applicable	Lab ID:	03-1448 MB
Date Analyzed:	06/16/23	Data File:	061612.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<75
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-43-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-01 1/8.1
Date Analyzed:	06/17/23	Data File:	061624.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<9.8	<5.7	1,2-Dichloropropane	<1.9	<0.4
Dichlorodifluoromethane	<8	<1.6	1,4-Dioxane	<2.9	<0.81
Chloromethane	<30	<15	2,2,4-Trimethylpentane	<38	<8.1
F-114	<17	<2.4	Methyl methacrylate	<33	<8.1
Vinyl chloride	<2.1	<0.81	Heptane	<33	<8.1
1,3-Butadiene	<0.36 j	<0.16 j	Bromodichloromethane	<0.54	<0.081
Butane	<39	<16	Trichloroethene	<0.87	<0.16
Bromomethane	<31	<8.1	cis-1,3-Dichloropropene	<7.4	<1.6
Chloroethane	<21	<8.1	4-Methyl-2-pentanone	<66	<16
Vinyl bromide	<3.5	<0.81	trans-1,3-Dichloropropene	<3.7	<0.81
Ethanol	<61 k	<32 k	Toluene	<61	<16
Acrolein	<0.93	<0.4	1,1,2-Trichloroethane	<0.44	<0.081
Pentane	<48	<16	2-Hexanone	<33	<8.1
Trichlorofluoromethane	<18	<3.2	Tetrachloroethene	240	35
Acetone	<38	<16	Dibromochloromethane	<0.69	<0.081
2-Propanol	<70	<28	1,2-Dibromoethane (EDB)	<0.62	<0.081
1,1-Dichloroethene	<3.2	<0.81	Chlorobenzene	<3.7	<0.81
trans-1,2-Dichloroethene	<3.2	<0.81	Ethylbenzene	<3.5	<0.81
Methylene chloride	<280	<81	1,1,2,2-Tetrachloroethane	<1.1	<0.16
t-Butyl alcohol (TBA)	<98	<32	Nonane	<42	<8.1
3-Chloropropene	<25	<8.1	Isopropylbenzene	<80	<16
CFC-113	<12	<1.6	2-Chlorotoluene	<42	<8.1
Carbon disulfide	<50	<16	Propylbenzene	<40	<8.1
Methyl t-butyl ether (MTBE)	<58	<16	4-Ethyltoluene	<40	<8.1
Vinyl acetate	<57	<16	m,p-Xylene	<7	<1.6
1,1-Dichloroethane	<3.3	<0.81	o-Xylene	<3.5	<0.81
cis-1,2-Dichloroethene	<3.2	<0.81	Styrene	<6.9	<1.6
Hexane	<29	<8.1	Bromoform	<17	<1.6
Chloroform	0.44	0.089	Benzyl chloride	<0.42	<0.081
Ethyl acetate	<58	<16	1,3,5-Trimethylbenzene	<40	<8.1
Tetrahydrofuran	<4.8	<1.6	1,2,4-Trimethylbenzene	<40	<8.1
2-Butanone (MEK)	<48	<16	1,3-Dichlorobenzene	<4.9	<0.81
1,2-Dichloroethane (EDC)	<0.33	<0.081	1,4-Dichlorobenzene	<1.9	<0.31
1,1,1-Trichloroethane	<4.4	<0.81	1,2-Dichlorobenzene	<4.9	<0.81
Carbon tetrachloride	<2.5	<0.4	1,2,4-Trichlorobenzene	<6	<0.81
Benzene	<2.6	<0.81	Naphthalene	<2.1	<0.4
Cyclohexane	<56	<16	Hexachlorobutadiene	<1.7	<0.16

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-41-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-02 1/16
Date Analyzed:	06/17/23	Data File:	061625.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<19	<11	1,2-Dichloropropane	<3.7	<0.8
Dichlorodifluoromethane	<16	<3.2	1,4-Dioxane	<5.8	<1.6
Chloromethane	<59	<29	2,2,4-Trimethylpentane	<75	<16
F-114	<34	<4.8	Methyl methacrylate	<66	<16
Vinyl chloride	<4.1	<1.6	Heptane	<66	<16
1,3-Butadiene	<0.71 j	<0.32 j	Bromodichloromethane	<1.1	<0.16
Butane	<76	<32	Trichloroethene	75	14
Bromomethane	<62	<16	cis-1,3-Dichloropropene	<15	<3.2
Chloroethane	<42	<16	4-Methyl-2-pentanone	<130	<32
Vinyl bromide	<7	<1.6	trans-1,3-Dichloropropene	<7.3	<1.6
Ethanol	<120 k	<64 k	Toluene	<120	<32
Acrolein	<1.8	<0.8	1,1,2-Trichloroethane	<0.87	<0.16
Pentane	<94	<32	2-Hexanone	<66	<16
Trichlorofluoromethane	<36	<6.4	Tetrachloroethene	4,900 ve	720 ve
Acetone	<76	<32	Dibromochloromethane	<1.4	<0.16
2-Propanol	<140	<56	1,2-Dibromoethane (EDB)	<1.2	<0.16
1,1-Dichloroethene	<6.3	<1.6	Chlorobenzene	<7.4	<1.6
trans-1,2-Dichloroethene	<6.3	<1.6	Ethylbenzene	<6.9	<1.6
Methylene chloride	<560	<160	1,1,2,2-Tetrachloroethane	<2.2	<0.32
t-Butyl alcohol (TBA)	<190	<64	Nonane	<84	<16
3-Chloropropene	<50	<16	Isopropylbenzene	<160	<32
CFC-113	<25	<3.2	2-Chlorotoluene	<83	<16
Carbon disulfide	<100	<32	Propylbenzene	<79	<16
Methyl t-butyl ether (MTBE)	<120	<32	4-Ethyltoluene	<79	<16
Vinyl acetate	<110	<32	m,p-Xylene	<14	<3.2
1,1-Dichloroethane	<6.5	<1.6	o-Xylene	<6.9	<1.6
cis-1,2-Dichloroethene	<6.3	<1.6	Styrene	<14	<3.2
Hexane	<56	<16	Bromoform	<33	<3.2
Chloroform	1.2	0.26	Benzyl chloride	<0.83	<0.16
Ethyl acetate	<120	<32	1,3,5-Trimethylbenzene	<79	<16
Tetrahydrofuran	<9.4	<3.2	1,2,4-Trimethylbenzene	<79	<16
2-Butanone (MEK)	<94	<32	1,3-Dichlorobenzene	<9.6	<1.6
1,2-Dichloroethane (EDC)	<0.65	<0.16	1,4-Dichlorobenzene	<3.7	<0.61
1,1,1-Trichloroethane	<8.7	<1.6	1,2-Dichlorobenzene	<9.6	<1.6
Carbon tetrachloride	<5	<0.8	1,2,4-Trichlorobenzene	<12	<1.6
Benzene	<5.1	<1.6	Naphthalene	<4.2	<0.8
Cyclohexane	<110	<32	Hexachlorobutadiene	<3.4	<0.32

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-DUP-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-03 1/16
Date Analyzed:	06/17/23	Data File:	061626.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<19	<11	1,2-Dichloropropane	<3.7	<0.8
Dichlorodifluoromethane	<16	<3.2	1,4-Dioxane	<5.8	<1.6
Chloromethane	<59	<29	2,2,4-Trimethylpentane	<75	<16
F-114	<34	<4.8	Methyl methacrylate	<66	<16
Vinyl chloride	<4.1	<1.6	Heptane	<66	<16
1,3-Butadiene	<0.71 j	<0.32 j	Bromodichloromethane	<1.1	<0.16
Butane	<76	<32	Trichloroethene	75	14
Bromomethane	<62	<16	cis-1,3-Dichloropropene	<15	<3.2
Chloroethane	<42	<16	4-Methyl-2-pentanone	<130	<32
Vinyl bromide	<7	<1.6	trans-1,3-Dichloropropene	<7.3	<1.6
Ethanol	<120 k	<64 k	Toluene	<120	<32
Acrolein	<1.8	<0.8	1,1,2-Trichloroethane	<0.87	<0.16
Pentane	<94	<32	2-Hexanone	<66	<16
Trichlorofluoromethane	<36	<6.4	Tetrachloroethene	4,900 ve	720 ve
Acetone	<76	<32	Dibromochloromethane	<1.4	<0.16
2-Propanol	<140	<56	1,2-Dibromoethane (EDB)	<1.2	<0.16
1,1-Dichloroethene	<6.3	<1.6	Chlorobenzene	<7.4	<1.6
trans-1,2-Dichloroethene	<6.3	<1.6	Ethylbenzene	<6.9	<1.6
Methylene chloride	<560	<160	1,1,2,2-Tetrachloroethane	<2.2	<0.32
t-Butyl alcohol (TBA)	<190	<64	Nonane	<84	<16
3-Chloropropene	<50	<16	Isopropylbenzene	<160	<32
CFC-113	<25	<3.2	2-Chlorotoluene	<83	<16
Carbon disulfide	<100	<32	Propylbenzene	<79	<16
Methyl t-butyl ether (MTBE)	<120	<32	4-Ethyltoluene	<79	<16
Vinyl acetate	<110	<32	m,p-Xylene	<14	<3.2
1,1-Dichloroethane	<6.5	<1.6	o-Xylene	<6.9	<1.6
cis-1,2-Dichloroethene	<6.3	<1.6	Styrene	<14	<3.2
Hexane	<56	<16	Bromoform	<33	<3.2
Chloroform	1.2	0.24	Benzyl chloride	<0.83	<0.16
Ethyl acetate	<120	<32	1,3,5-Trimethylbenzene	<79	<16
Tetrahydrofuran	<9.4	<3.2	1,2,4-Trimethylbenzene	<79	<16
2-Butanone (MEK)	<94	<32	1,3-Dichlorobenzene	<9.6	<1.6
1,2-Dichloroethane (EDC)	<0.65	<0.16	1,4-Dichlorobenzene	<3.7	<0.61
1,1,1-Trichloroethane	<8.7	<1.6	1,2-Dichlorobenzene	<9.6	<1.6
Carbon tetrachloride	<5	<0.8	1,2,4-Trichlorobenzene	<12	<1.6
Benzene	<5.1	<1.6	Naphthalene	<4.2	<0.8
Cyclohexane	<110	<32	Hexachlorobutadiene	<3.4	<0.32

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-44-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-04 1/17
Date Analyzed:	06/17/23	Data File:	061627.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<20	<12	1,2-Dichloropropane	<3.9	<0.85
Dichlorodifluoromethane	<17	<3.4	1,4-Dioxane	<6.1	<1.7
Chloromethane	<63	<31	2,2,4-Trimethylpentane	<79	<17
F-114	<36	<5.1	Methyl methacrylate	<70	<17
Vinyl chloride	<4.3	<1.7	Heptane	<70	<17
1,3-Butadiene	<0.75 j	<0.34 j	Bromodichloromethane	<1.1	<0.17
Butane	<81	<34	Trichloroethene	930	170
Bromomethane	<66	<17	cis-1,3-Dichloropropene	<15	<3.4
Chloroethane	<45	<17	4-Methyl-2-pentanone	<140	<34
Vinyl bromide	<7.4	<1.7	trans-1,3-Dichloropropene	<7.7	<1.7
Ethanol	<130 k	<68 k	Toluene	<130	<34
Acrolein	<1.9	<0.85	1,1,2-Trichloroethane	<0.93	<0.17
Pentane	<100	<34	2-Hexanone	<70	<17
Trichlorofluoromethane	<38	<6.8	Tetrachloroethene	6,100 ve	900 ve
Acetone	<81	<34	Dibromochloromethane	<1.4	<0.17
2-Propanol	<150	<59	1,2-Dibromoethane (EDB)	<1.3	<0.17
1,1-Dichloroethene	<6.7	<1.7	Chlorobenzene	<7.8	<1.7
trans-1,2-Dichloroethene	120	29	Ethylbenzene	<7.4	<1.7
Methylene chloride	<590	<170	1,1,2,2-Tetrachloroethane	<2.3	<0.34
t-Butyl alcohol (TBA)	<210	<68	Nonane	<89	<17
3-Chloropropene	<53	<17	Isopropylbenzene	<170	<34
CFC-113	<26	<3.4	2-Chlorotoluene	<88	<17
Carbon disulfide	<110	<34	Propylbenzene	<84	<17
Methyl t-butyl ether (MTBE)	<120	<34	4-Ethyltoluene	<84	<17
Vinyl acetate	<120	<34	m,p-Xylene	<15	<3.4
1,1-Dichloroethane	<6.9	<1.7	o-Xylene	<7.4	<1.7
cis-1,2-Dichloroethene	18	4.5	Styrene	<14	<3.4
Hexane	<60	<17	Bromoform	<35	<3.4
Chloroform	1.8	0.37	Benzyl chloride	<0.88	<0.17
Ethyl acetate	<120	<34	1,3,5-Trimethylbenzene	<84	<17
Tetrahydrofuran	<10	<3.4	1,2,4-Trimethylbenzene	<84	<17
2-Butanone (MEK)	<100	<34	1,3-Dichlorobenzene	<10	<1.7
1,2-Dichloroethane (EDC)	<0.69	<0.17	1,4-Dichlorobenzene	<3.9	<0.65
1,1,1-Trichloroethane	<9.3	<1.7	1,2-Dichlorobenzene	<10	<1.7
Carbon tetrachloride	<5.3	<0.85	1,2,4-Trichlorobenzene	<13	<1.7
Benzene	<5.4	<1.7	Naphthalene	<4.5	<0.85
Cyclohexane	<120	<34	Hexachlorobutadiene	<3.6	<0.34

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-42-061223	Client:	Maul Foster Alongi
Date Received:	06/12/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306188-05 1/16
Date Analyzed:	06/17/23	Data File:	061628.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<19	<11	1,2-Dichloropropane	<3.7	<0.8
Dichlorodifluoromethane	<16	<3.2	1,4-Dioxane	<5.8	<1.6
Chloromethane	<59	<29	2,2,4-Trimethylpentane	<75	<16
F-114	<34	<4.8	Methyl methacrylate	<66	<16
Vinyl chloride	<4.1	<1.6	Heptane	<66	<16
1,3-Butadiene	<0.71 j	<0.32 j	Bromodichloromethane	<1.1	<0.16
Butane	<76	<32	Trichloroethene	<1.7	<0.32
Bromomethane	<62	<16	cis-1,3-Dichloropropene	<15	<3.2
Chloroethane	<42	<16	4-Methyl-2-pentanone	<130	<32
Vinyl bromide	<7	<1.6	trans-1,3-Dichloropropene	<7.3	<1.6
Ethanol	<120 k	<64 k	Toluene	<120	<32
Acrolein	<1.8	<0.8	1,1,2-Trichloroethane	<0.87	<0.16
Pentane	<94	<32	2-Hexanone	<66	<16
Trichlorofluoromethane	<36	<6.4	Tetrachloroethene	730	110
Acetone	<76	<32	Dibromochloromethane	<1.4	<0.16
2-Propanol	<140	<56	1,2-Dibromoethane (EDB)	<1.2	<0.16
1,1-Dichloroethene	<6.3	<1.6	Chlorobenzene	<7.4	<1.6
trans-1,2-Dichloroethene	<6.3	<1.6	Ethylbenzene	<6.9	<1.6
Methylene chloride	<560	<160	1,1,2,2-Tetrachloroethane	<2.2	<0.32
t-Butyl alcohol (TBA)	<190	<64	Nonane	<84	<16
3-Chloropropene	<50	<16	Isopropylbenzene	<160	<32
CFC-113	<25	<3.2	2-Chlorotoluene	<83	<16
Carbon disulfide	<100	<32	Propylbenzene	<79	<16
Methyl t-butyl ether (MTBE)	<120	<32	4-Ethyltoluene	<79	<16
Vinyl acetate	<110	<32	m,p-Xylene	<14	<3.2
1,1-Dichloroethane	<6.5	<1.6	o-Xylene	<6.9	<1.6
cis-1,2-Dichloroethene	<6.3	<1.6	Styrene	<14	<3.2
Hexane	<56	<16	Bromoform	<33	<3.2
Chloroform	<0.78	<0.16	Benzyl chloride	<0.83	<0.16
Ethyl acetate	<120	<32	1,3,5-Trimethylbenzene	<79	<16
Tetrahydrofuran	<9.4	<3.2	1,2,4-Trimethylbenzene	<79	<16
2-Butanone (MEK)	<94	<32	1,3-Dichlorobenzene	<9.6	<1.6
1,2-Dichloroethane (EDC)	<0.65	<0.16	1,4-Dichlorobenzene	<3.7	<0.61
1,1,1-Trichloroethane	<8.7	<1.6	1,2-Dichlorobenzene	<9.6	<1.6
Carbon tetrachloride	<5	<0.8	1,2,4-Trichlorobenzene	<12	<1.6
Benzene	<5.1	<1.6	Naphthalene	<4.2	<0.8
Cyclohexane	<110	<32	Hexachlorobutadiene	<3.4	<0.32

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Potter Air Sampling M0615.20.006
Date Collected:	Not Applicable	Lab ID:	03-1448 MB
Date Analyzed:	06/16/23	Data File:	061612.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	89	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2	<0.7	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	<0.99	<0.2	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044 j	<0.02 j	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2	<2
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5 k	<4 k	Toluene	<7.5	<2
Acrolein	<0.11	<0.05	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	<4.8	<2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	<0.049	<0.01	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	<0.31	<0.05	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	<0.26	<0.05
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Date of Report: 06/27/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306188
Date Extracted: 06/26/23
Date Analyzed: 06/26/23

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Results Reported as % Helium

Sample ID Laboratory ID	Helium
TWA-SV-43-061223 306188-01	<0.6
TWA-SV-41-061223 306188-02	<0.6
TWA-SV-DUP-061223 306188-03	<0.6
TWA-SV-42-061223 306188-05	<0.6
Method Blank 03-1465 MB	<0.6

Date of Report: 06/27/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306188

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: 306244-01 1/5.5 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
APH EC5-8 aliphatics	ug/m3	550	590	7
APH EC9-12 aliphatics	ug/m3	1,000	1,000	0
APH EC9-10 aromatics	ug/m3	<140	<140	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	67	105	70-130
APH EC9-12 aliphatics	ug/m3	67	128	70-130
APH EC9-10 aromatics	ug/m3	67	95	70-130

Date of Report: 06/27/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306188

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 306244-01 1/5.5 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Propene	ug/m3	<6.6	<6.6	nm
Dichlorodifluoromethane	ug/m3	<5.4	<5.4	nm
Chloromethane	ug/m3	<20	<20	nm
F-114	ug/m3	<12	<12	nm
Vinyl chloride	ug/m3	<1.4	<1.4	nm
1,3-Butadiene	ug/m3	<0.24	<0.24	nm
Butane	ug/m3	<26	<26	nm
Bromomethane	ug/m3	<21	<21	nm
Chloroethane	ug/m3	<15	<15	nm
Vinyl bromide	ug/m3	<2.4	<2.4	nm
Ethanol	ug/m3	<41	<41	nm
Acrolein	ug/m3	<0.63	<0.63	nm
Pentane	ug/m3	<32	<32	nm
Trichlorofluoromethane	ug/m3	<12	<12	nm
Acetone	ug/m3	32	30	6
2-Propanol	ug/m3	<47	<47	nm
1,1-Dichloroethene	ug/m3	<2.2	<2.2	nm
trans-1,2-Dichloroethene	ug/m3	<2.2	<2.2	nm
Methylene chloride	ug/m3	<190	<190	nm
t-Butyl alcohol (TBA)	ug/m3	<67	<67	nm
3-Chloropropene	ug/m3	<17	<17	nm
CFC-113	ug/m3	<8.4	<8.4	nm
Carbon disulfide	ug/m3	<34	<34	nm
Methyl t-butyl ether (MTBE)	ug/m3	<40	<40	nm
Vinyl acetate	ug/m3	<39	<39	nm
1,1-Dichloroethane	ug/m3	<2.2	<2.2	nm
cis-1,2-Dichloroethene	ug/m3	<2.2	<2.2	nm
Hexane	ug/m3	<19	<19	nm
Chloroform	ug/m3	41	41	0
Ethyl acetate	ug/m3	<40	<40	nm
Tetrahydrofuran	ug/m3	<3.2	<3.2	nm
2-Butanone (MEK)	ug/m3	<32	<32	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.22	<0.22	nm
1,1,1-Trichloroethane	ug/m3	<3	<3	nm
Carbon tetrachloride	ug/m3	<1.7	<1.7	nm
Benzene	ug/m3	<1.8	<1.8	nm
Cyclohexane	ug/m3	<38	<38	nm
1,2-Dichloropropane	ug/m3	<1.3	<1.3	nm
1,4-Dioxane	ug/m3	<2	<2	nm
2,2,4-Trimethylpentane	ug/m3	<26	<26	nm

Date of Report: 06/27/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306188

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 306244-01 1/5.5 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Methyl methacrylate	ug/m3	<23	<23	nm
Heptane	ug/m3	<23	<23	nm
Bromodichloromethane	ug/m3	12	12	0
Trichloroethene	ug/m3	<0.59	<0.59	nm
cis-1,3-Dichloropropene	ug/m3	<5	<5	nm
4-Methyl-2-pentanone	ug/m3	<45	<45	nm
trans-1,3-Dichloropropene	ug/m3	<2.5	<2.5	nm
Toluene	ug/m3	<41	<41	nm
1,1,2-Trichloroethane	ug/m3	<0.3	<0.3	nm
2-Hexanone	ug/m3	<23	<23	nm
Tetrachloroethene	ug/m3	<37	<37	nm
Dibromochloromethane	ug/m3	2.1	2.0	5
1,2-Dibromoethane (EDB)	ug/m3	<0.42	<0.42	nm
Chlorobenzene	ug/m3	<2.5	<2.5	nm
Ethylbenzene	ug/m3	<2.4	<2.4	nm
1,1,2,2-Tetrachloroethane	ug/m3	<0.76	<0.76	nm
Nonane	ug/m3	<29	<29	nm
Isopropylbenzene	ug/m3	<54	<54	nm
2-Chlorotoluene	ug/m3	<28	<28	nm
Propylbenzene	ug/m3	<27	<27	nm
4-Ethyltoluene	ug/m3	<27	<27	nm
m,p-Xylene	ug/m3	<4.8	<4.8	nm
o-Xylene	ug/m3	<2.4	<2.4	nm
Styrene	ug/m3	<4.7	<4.7	nm
Bromoform	ug/m3	<11	<11	nm
Benzyl chloride	ug/m3	<0.28	<0.28	nm
1,3,5-Trimethylbenzene	ug/m3	<27	<27	nm
1,2,4-Trimethylbenzene	ug/m3	<27	<27	nm
1,3-Dichlorobenzene	ug/m3	<3.3	<3.3	nm
1,4-Dichlorobenzene	ug/m3	<1.3	<1.3	nm
1,2-Dichlorobenzene	ug/m3	<3.3	<3.3	nm
1,2,4-Trichlorobenzene	ug/m3	<4.1	<4.1	nm
Naphthalene	ug/m3	<1.4	<1.4	nm
Hexachlorobutadiene	ug/m3	<1.2	<1.2	nm

Date of Report: 06/27/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306188

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Propene	ug/m3	23	120	70-130
Dichlorodifluoromethane	ug/m3	67	125	70-130
Chloromethane	ug/m3	28	116	70-130
F-114	ug/m3	94	123	70-130
Vinyl chloride	ug/m3	35	114	70-130
1,3-Butadiene	ug/m3	30	98	70-130
Butane	ug/m3	32	114	70-130
Bromomethane	ug/m3	52	122	70-130
Chloroethane	ug/m3	36	117	70-130
Vinyl bromide	ug/m3	59	102	70-130
Ethanol	ug/m3	25	133 vo	70-130
Acrolein	ug/m3	31	90	70-130
Pentane	ug/m3	40	104	70-130
Trichlorofluoromethane	ug/m3	76	129	70-130
Acetone	ug/m3	32	116	70-130
2-Propanol	ug/m3	33	108	70-130
1,1-Dichloroethene	ug/m3	54	105	70-130
trans-1,2-Dichloroethene	ug/m3	54	102	70-130
Methylene chloride	ug/m3	94	117	70-130
t-Butyl alcohol (TBA)	ug/m3	41	104	70-130
3-Chloropropene	ug/m3	42	109	70-130
CFC-113	ug/m3	100	119	70-130
Carbon disulfide	ug/m3	42	115	70-130
Methyl t-butyl ether (MTBE)	ug/m3	49	92	70-130
Vinyl acetate	ug/m3	48	104	70-130
1,1-Dichloroethane	ug/m3	55	118	70-130
cis-1,2-Dichloroethene	ug/m3	54	96	70-130
Hexane	ug/m3	48	91	70-130
Chloroform	ug/m3	66	113	70-130
Ethyl acetate	ug/m3	49	115	70-130
Tetrahydrofuran	ug/m3	40	102	70-130
2-Butanone (MEK)	ug/m3	40	101	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	118	70-130
1,1,1-Trichloroethane	ug/m3	74	115	70-130
Carbon tetrachloride	ug/m3	85	116	70-130
Benzene	ug/m3	43	98	70-130
Cyclohexane	ug/m3	46	84	70-130
1,2-Dichloropropane	ug/m3	62	122	70-130
1,4-Dioxane	ug/m3	49	96	70-130
2,2,4-Trimethylpentane	ug/m3	63	108	70-130

Date of Report: 06/27/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306188

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl methacrylate	ug/m3	55	118	70-130
Heptane	ug/m3	55	109	70-130
Bromodichloromethane	ug/m3	90	127	70-130
Trichloroethene	ug/m3	73	117	70-130
cis-1,3-Dichloropropene	ug/m3	61	116	70-130
4-Methyl-2-pentanone	ug/m3	55	108	70-130
trans-1,3-Dichloropropene	ug/m3	61	110	70-130
Toluene	ug/m3	51	87	70-130
1,1,2-Trichloroethane	ug/m3	74	120	70-130
2-Hexanone	ug/m3	55	117	70-130
Tetrachloroethene	ug/m3	92	111	70-130
Dibromochloromethane	ug/m3	120	116	70-130
1,2-Dibromoethane (EDB)	ug/m3	100	112	70-130
Chlorobenzene	ug/m3	62	108	70-130
Ethylbenzene	ug/m3	59	87	70-130
1,1,2,2-Tetrachloroethane	ug/m3	93	117	70-130
Nonane	ug/m3	71	105	70-130
Isopropylbenzene	ug/m3	66	92	70-130
2-Chlorotoluene	ug/m3	70	98	70-130
Propylbenzene	ug/m3	66	101	70-130
4-Ethyltoluene	ug/m3	66	92	70-130
m,p-Xylene	ug/m3	120	84	70-130
o-Xylene	ug/m3	59	92	70-130
Styrene	ug/m3	58	89	70-130
Bromoform	ug/m3	140	98	70-130
Benzyl chloride	ug/m3	70	110	70-130
1,3,5-Trimethylbenzene	ug/m3	66	99	70-130
1,2,4-Trimethylbenzene	ug/m3	66	91	70-130
1,3-Dichlorobenzene	ug/m3	81	108	70-130
1,4-Dichlorobenzene	ug/m3	81	103	70-130
1,2-Dichlorobenzene	ug/m3	81	106	70-130
1,2,4-Trichlorobenzene	ug/m3	100	85	70-130
Naphthalene	ug/m3	71	73	70-130
Hexachlorobutadiene	ug/m3	140	106	70-130

Date of Report: 06/27/23
Date Received: 06/12/23
Project: Potter Air Sampling M0615.20.006, F&BI 306188

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Laboratory Code: 306188-05 (Duplicate)

Analyte	Sample Result (%)	Duplicate Result (%)	Relative Percent Difference	Acceptance Criteria
Helium	<0.6	<0.6	nm	0-20

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

306188

SAMPLE CHAIN OF CUSTODY

06/12/23

Page # 1 of 1

Report To Audrey Hackett
Company Maul Foster & Alongi
Address 2815 2nd Ave, Ste 540
City, State, ZIP Seattle, WA 98121
Phone (206) 331-1835 Email ahackett@maulfoster.com

SAMPLERS (*signature*): Amanda Bixby

PROJECT NAME & ADDRESS: Potter Air Sampling

PO #: M0615.20.006

NOTES: One 1-L Summa and one 1-L Tedlar per sample.

INVOICE TO: accounting@maulfoster.com

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	CH_4, O_2, CO_2	Notes
TWA-SV-43-061223	01 A/B	8527	70	IA / (SG)	6/12/23	-29	0932	-5	0936	X		X	X	X	X	
TWA-SV-41-061223	02	8533	55	IA / (SG)	6/12/23	-30+	1033	-5	1038	X			X	X	X	
TWA-SV-DUP-061223	03	9987	241	IA / (SG)	6/12/23	-29.5	1033	-5	1038	X			X	X	X	
TWA-SV-44-061223	04	8255	64	IA / (SG)	6/12/23	-29	1159	-5	1204	X			X	X	X	* NOT ANALYZED
TWA-SV-42-061223	05	8207	301	IA / (SG)	6/12/23	-29.5	1239	-5	1244	X			X	X	X	SP 7/26
				IA / (SG)												
				IA / (SG)												
				IA / (SG)												Samples received at 23 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Amanda Bixby	Amanda Bixby	MFA	6/12/23	1315
Received by: VINH	VINH	FBI	6/12/23	1315
Relinquished by:				
Received by:				

FORMS\COC\COC TO-15.DOC

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 306188
Work Order Number: 2306186

June 20, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 5 sample(s) on 6/13/2023 for the analyses presented in the following report.

Major Gases by EPA Method 3C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *06/20/2023*

CLIENT: Friedman & Bruya
Project: 306188
Work Order: 2306186

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2306186-001	TWA-SV-43-061223	06/12/2023 9:36 AM	06/13/2023 1:30 PM
2306186-002	TWA-SV-41-061223	06/12/2023 10:38 AM	06/13/2023 1:30 PM
2306186-003	TWA-SV-DUP-061223	06/12/2023 10:38 AM	06/13/2023 1:30 PM
2306186-004	TWA-SV-44-061223	06/12/2023 12:04 PM	06/13/2023 1:30 PM
2306186-005	TWA-SV-42-061223	06/12/2023 12:44 PM	06/13/2023 1:30 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2306186**
Date: **6/20/2023**

CLIENT: Friedman & Bruya
Project: 306188

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Major gases are reported as % ratio of the Major Gases analyzed (Carbon dioxide, Carbon Monoxide, Methane, Nitrogen, Oxygen and Hydrogen).

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS). The LCS is processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Note: The estimated BTU calculation is based off of the methane result.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Friedman & Bruya
Project: 306188

Lab ID: 2306186-001 **Collection Date:** 6/12/2023 9:36:00 AM
Client Sample ID: **TWA-SV-43-061223** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R84687		Analyst: LB
Carbon Dioxide	2.48	0.0500		%	1	6/14/2023 3:53:00 PM
Methane	ND	0.0500		%	1	6/14/2023 3:53:00 PM
Oxygen	18.8	0.0500		%	1	6/14/2023 3:53:00 PM

Lab ID: 2306186-002 **Collection Date:** 6/12/2023 10:38:00 AM
Client Sample ID: **TWA-SV-41-061223** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R84687		Analyst: LB
Carbon Dioxide	ND	0.0500		%	1	6/14/2023 4:06:00 PM
Methane	ND	0.0500		%	1	6/14/2023 4:06:00 PM
Oxygen	20.4	0.0500		%	1	6/14/2023 4:06:00 PM

Lab ID: 2306186-003 **Collection Date:** 6/12/2023 10:38:00 AM
Client Sample ID: **TWA-SV-DUP-061223** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R84687		Analyst: LB
Carbon Dioxide	ND	0.0500		%	1	6/14/2023 4:47:00 PM
Methane	ND	0.0500		%	1	6/14/2023 4:47:00 PM
Oxygen	20.4	0.0500		%	1	6/14/2023 4:47:00 PM

Analytical Report

Work Order: **2306186**
Date Reported: **6/20/2023**

CLIENT: Friedman & Bruya
Project: 306188

Lab ID: 2306186-004 **Collection Date:** 6/12/2023 12:04:00 PM
Client Sample ID: **TWA-SV-44-061223** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R84687		Analyst: LB
Carbon Dioxide	1.54	0.0500		%	1	6/14/2023 5:00:00 PM
Methane	ND	0.0500		%	1	6/14/2023 5:00:00 PM
Oxygen	20.6	0.0500		%	1	6/14/2023 5:00:00 PM

Lab ID: 2306186-005 **Collection Date:** 6/12/2023 12:44:00 PM
Client Sample ID: **TWA-SV-42-061223** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R84687		Analyst: LB
Carbon Dioxide	1.79	0.0500		%	1	6/14/2023 5:13:00 PM
Methane	ND	0.0500		%	1	6/14/2023 5:13:00 PM
Oxygen	20.3	0.0500		%	1	6/14/2023 5:13:00 PM

Work Order: 2306186
CLIENT: Friedman & Bruya
Project: 306188

QC SUMMARY REPORT

Major Gases by EPA Method 3C

Sample ID: **LCS-R84687** SampType: **LCS** Units: **%** Prep Date: **6/14/2023** RunNo: **84687**
Client ID: **LCSW** Batch ID: **R84687** Analysis Date: **6/14/2023** SeqNo: **1767579**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	103	0.0500	100.0	0	103	70	130				
Methane	103	0.0500	100.0	0	103	70	130				
Oxygen	102	0.0500	100.0	0	102	70	130				

Sample ID: **2306186-001AREP** SampType: **REP** Units: **%** Prep Date: **6/14/2023** RunNo: **84687**
Client ID: **TWA-SV-43-061223** Batch ID: **R84687** Analysis Date: **6/14/2023** SeqNo: **1767575**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	2.50	0.0500						2.476	1.13	30	
Methane	ND	0.0500						0		30	
Oxygen	18.7	0.0500						18.85	0.658	30	

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2306186
Logged by:	Clare Griggs	Date Received:	6/13/2023 1:30:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2306186

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
Fremont

PROJECT NAME/NO.	PO #
306188	D-328

REMARKS

EQuIS 4 EDD

TURNAROUND TIME

☒ Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: major gases CH4, O2, CO2	COD	Nitrate	Sulfate	CO2	dissolved methane					Notes
TWA-SV-43-061223		6/12/2023	936	vapor	1	x										
TWA-SV-41-061223		6/12/2023	1038	vapor	1	x										
TWA-SV-DUP-061223		6/12/2023	1038	vapor	1	x										
TWA-SV-44-061223		6/12/2023	1204	vapor	1	x										
TWA-SV-42-061223		6/12/2023	1244	vapor	1	x										

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	6/12/23	0310PM
Received by:	Alli Miller	Alli Miller	FAI	6/13/23	1330
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 27, 2023

Audrey Hackett, Project Manager
Maul Foster Alongi
2815 2nd Ave, Suite 540
Seattle, WA 98121

Dear Ms Hackett:

Included are the results from the testing of material submitted on June 13, 2023 from the Potter Air Sampling M0615.20.006, F&BI 306193 project. There are 17 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Amanda Bixby
MFA0627R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 13, 2023 by Friedman & Bruya, Inc. from the Maul Foster Alongi Potter Air Sampling M0615.20.006, F&BI 306193 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
306193 -01	TWA-SV-45-061223
306193 -02	TWA-SV-35-061223
306193 -03	TWA-SV-36-061223

The samples were sent to Fremont Analytical for major gases analysis. The tedlar for TWA-SV-45-061223 was compromised, therefore a tedlar was prepared from the canister once the analysis was complete. The report from Fremont for samples TWA-SV-35-061223 and TWA-SV-36-061223 is included in the report. The report for TWA-SV-45-061223 will be forwarded upon receipt.

The APH EC5-8 aliphatics, APH EC9-12 aliphatics, hexane, cyclohexane, 2,2,4-trimethylpentane, and heptane concentrations in sample TWA-SV-35-061223 exceeded the calibration range of the instrument. The data were flagged accordingly.

The tetrachloroethene concentration in sample TWA-SV-45-061223 exceeded the calibration range of the instrument. The data were flagged accordingly.

The TO-15 calibration standard exceeded the acceptance criteria for several analytes. The compounds were not detected, therefore the results do not represent an out of control condition.

All other quality control requirements were acceptable.

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-45-061223	Client:	Maul Foster Alongi
Date Received:	06/13/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306193-01 1/16
Date Analyzed:	06/27/23	Data File:	062630.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	2,100
APH EC9-12 aliphatics	<400
APH EC9-10 aromatics	<400

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-35-061223	Client:	Maul Foster Alongi
Date Received:	06/13/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306193-02 1/250
Date Analyzed:	06/27/23	Data File:	062631.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	117	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	670,000 ve
APH EC9-12 aliphatics	230,000 ve
APH EC9-10 aromatics	<6,200

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	TWA-SV-36-061223	Client:	Maul Foster Alongi
Date Received:	06/13/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306193-03 1/5.3
Date Analyzed:	06/27/23	Data File:	062629.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	410
APH EC9-12 aliphatics	200
APH EC9-10 aromatics	<130

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Potter Air Sampling M0615.20.006
Date Collected:	Not Applicable	Lab ID:	03-1461 MB
Date Analyzed:	06/26/23	Data File:	062612.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<75
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-45-061223	Client:	Maul Foster Alongi
Date Received:	06/13/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306193-01 1/16
Date Analyzed:	06/27/23	Data File:	062630.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<19	<11	1,2-Dichloropropane	<3.7	<0.8
Dichlorodifluoromethane	<16	<3.2	1,4-Dioxane	<5.8	<1.6
Chloromethane	<59	<29	2,2,4-Trimethylpentane	<75	<16
F-114	<34	<4.8	Methyl methacrylate	<66	<16
Vinyl chloride	<4.1	<1.6	Heptane	<66	<16
1,3-Butadiene	<0.71	<0.32	Bromodichloromethane	<1.1	<0.16
Butane	<76	<32	Trichloroethene	<1.7	<0.32
Bromomethane	<62	<16	cis-1,3-Dichloropropene	<15	<3.2
Chloroethane	<42	<16	4-Methyl-2-pentanone	<130 k	<32 k
Vinyl bromide	<7	<1.6	trans-1,3-Dichloropropene	<7.3	<1.6
Ethanol	<120 k	<64 k	Toluene	<120	<32
Acrolein	<1.8 k	<0.8 k	1,1,2-Trichloroethane	<0.87	<0.16
Pentane	<94	<32	2-Hexanone	<66	<16
Trichlorofluoromethane	<36	<6.4	Tetrachloroethene	2,300 ve	340 ve
Acetone	<76	<32	Dibromochloromethane	<1.4	<0.16
2-Propanol	<140	<56	1,2-Dibromoethane (EDB)	<1.2	<0.16
1,1-Dichloroethene	<6.3	<1.6	Chlorobenzene	<7.4	<1.6
trans-1,2-Dichloroethene	<6.3	<1.6	Ethylbenzene	<6.9	<1.6
Methylene chloride	<560	<160	1,1,2,2-Tetrachloroethane	<2.2	<0.32
t-Butyl alcohol (TBA)	<190 k	<64 k	Nonane	<84	<16
3-Chloropropene	<50	<16	Isopropylbenzene	<160	<32
CFC-113	<25	<3.2	2-Chlorotoluene	<83	<16
Carbon disulfide	<100	<32	Propylbenzene	<79	<16
Methyl t-butyl ether (MTBE)	<120	<32	4-Ethyltoluene	<79	<16
Vinyl acetate	<110 k	<32 k	m,p-Xylene	<14	<3.2
1,1-Dichloroethane	<6.5	<1.6	o-Xylene	<6.9	<1.6
cis-1,2-Dichloroethene	<6.3	<1.6	Styrene	<14	<3.2
Hexane	<56	<16	Bromoform	<33	<3.2
Chloroform	<0.78	<0.16	Benzyl chloride	<0.83 k	<0.16 k
Ethyl acetate	<120	<32	1,3,5-Trimethylbenzene	<79	<16
Tetrahydrofuran	<9.4	<3.2	1,2,4-Trimethylbenzene	<79	<16
2-Butanone (MEK)	<94	<32	1,3-Dichlorobenzene	<9.6 k	<1.6 k
1,2-Dichloroethane (EDC)	<0.65	<0.16	1,4-Dichlorobenzene	<3.7 k	<0.61 k
1,1,1-Trichloroethane	<8.7	<1.6	1,2-Dichlorobenzene	<9.6 k	<1.6 k
Carbon tetrachloride	<5	<0.8	1,2,4-Trichlorobenzene	<12 k	<1.6 k
Benzene	<5.1	<1.6	Naphthalene	<4.2	<0.8
Cyclohexane	<110	<32	Hexachlorobutadiene	<3.4 k	<0.32 k

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-35-061223	Client:	Maul Foster Alongi
Date Received:	06/13/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306193-02 1/250
Date Analyzed:	06/27/23	Data File:	062631.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	108	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<300	<170	1,2-Dichloropropane	<58	<12
Dichlorodifluoromethane	<250	<50	1,4-Dioxane	<90	<25
Chloromethane	<930	<450	2,2,4-Trimethylpentane	42,000 ve	9,000 ve
F-114	<520	<75	Methyl methacrylate	<1,000	<250
Vinyl chloride	<64	<25	Heptane	29,000 ve	7,100 ve
1,3-Butadiene	<11	<5	Bromodichloromethane	<17	<2.5
Butane	<1,200	<500	Trichloroethene	<27	<5
Bromomethane	<970	<250	cis-1,3-Dichloropropene	<230	<50
Chloroethane	<660	<250	4-Methyl-2-pentanone	<2,000 k	<500 k
Vinyl bromide	<110	<25	trans-1,3-Dichloropropene	<110	<25
Ethanol	<1,900 k	<1,000 k	Toluene	<1,900	<500
Acrolein	<29 k	<12 k	1,1,2-Trichloroethane	<14	<2.5
Pentane	2,400	830	2-Hexanone	<1,000	<250
Trichlorofluoromethane	<560	<100	Tetrachloroethene	<1,700	<250
Acetone	<1,200	<500	Dibromochloromethane	<21	<2.5
2-Propanol	<2,200	<870	1,2-Dibromoethane (EDB)	<19	<2.5
1,1-Dichloroethene	<99	<25	Chlorobenzene	<120	<25
trans-1,2-Dichloroethene	<99	<25	Ethylbenzene	<110	<25
Methylene chloride	<8,700	<2,500	1,1,2,2-Tetrachloroethane	<34	<5
t-Butyl alcohol (TBA)	<3,000 k	<1,000 k	Nonane	<1,300	<250
3-Chloropropene	<780	<250	Isopropylbenzene	<2,500	<500
CFC-113	<380	<50	2-Chlorotoluene	<1,300	<250
Carbon disulfide	<1,600	<500	Propylbenzene	<1,200	<250
Methyl t-butyl ether (MTBE)	<1,800	<500	4-Ethyltoluene	<1,200	<250
Vinyl acetate	<1,800 k	<500 k	m,p-Xylene	<220	<50
1,1-Dichloroethane	<100	<25	o-Xylene	170	38
cis-1,2-Dichloroethene	<99	<25	Styrene	<210	<50
Hexane	24,000 ve	6,800 ve	Bromoform	<520	<50
Chloroform	<12	<2.5	Benzyl chloride	<13 k	<2.5 k
Ethyl acetate	<1,800	<500	1,3,5-Trimethylbenzene	<1,200	<250
Tetrahydrofuran	<150	<50	1,2,4-Trimethylbenzene	<1,200	<250
2-Butanone (MEK)	<1,500	<500	1,3-Dichlorobenzene	<150 k	<25 k
1,2-Dichloroethane (EDC)	<10	<2.5	1,4-Dichlorobenzene	<57 k	<9.5 k
1,1,1-Trichloroethane	<140	<25	1,2-Dichlorobenzene	<150 k	<25 k
Carbon tetrachloride	<79	<12	1,2,4-Trichlorobenzene	<190 k	<25 k
Benzene	<80	<25	Naphthalene	<68	<13
Cyclohexane	20,000 ve	5,900 ve	Hexachlorobutadiene	<53 k	<5 k

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	TWA-SV-36-061223	Client:	Maul Foster Alongi
Date Received:	06/13/23	Project:	Potter Air Sampling M0615.20.006
Date Collected:	06/12/23	Lab ID:	306193-03 1/5.3
Date Analyzed:	06/27/23	Data File:	062629.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<6.4	<3.7	1,2-Dichloropropane	<1.2	<0.26
Dichlorodifluoromethane	<5.2	<1.1	1,4-Dioxane	<1.9	<0.53
Chloromethane	<20	<9.5	2,2,4-Trimethylpentane	<25	<5.3
F-114	<11	<1.6	Methyl methacrylate	<22	<5.3
Vinyl chloride	<1.4	<0.53	Heptane	<22	<5.3
1,3-Butadiene	<0.23	<0.11	Bromodichloromethane	<0.36	<0.053
Butane	<25	<11	Trichloroethene	<0.57	<0.11
Bromomethane	<21	<5.3	cis-1,3-Dichloropropene	<4.8	<1.1
Chloroethane	<14	<5.3	4-Methyl-2-pentanone	<43 k	<11 k
Vinyl bromide	<2.3	<0.53	trans-1,3-Dichloropropene	<2.4	<0.53
Ethanol	<40 k	<21 k	Toluene	<40	<11
Acrolein	<0.61 k	<0.26 k	1,1,2-Trichloroethane	<0.29	<0.053
Pentane	<31	<11	2-Hexanone	<22	<5.3
Trichlorofluoromethane	<12	<2.1	Tetrachloroethene	43	6.3
Acetone	<25	<11	Dibromochloromethane	<0.45	<0.053
2-Propanol	<46	<19	1,2-Dibromoethane (EDB)	<0.41	<0.053
1,1-Dichloroethene	<2.1	<0.53	Chlorobenzene	<2.4	<0.53
trans-1,2-Dichloroethene	<2.1	<0.53	Ethylbenzene	2.9	0.66
Methylene chloride	<180	<53	1,1,2,2-Tetrachloroethane	<0.73	<0.11
t-Butyl alcohol (TBA)	<64 k	<21 k	Nonane	<28	<5.3
3-Chloropropene	<17	<5.3	Isopropylbenzene	<52	<11
CFC-113	<8.1	<1.1	2-Chlorotoluene	<27	<5.3
Carbon disulfide	<33	<11	Propylbenzene	<26	<5.3
Methyl t-butyl ether (MTBE)	<38	<11	4-Ethyltoluene	<26	<5.3
Vinyl acetate	<37 k	<11 k	m,p-Xylene	10	2.3
1,1-Dichloroethane	<2.1	<0.53	o-Xylene	2.6	0.59
cis-1,2-Dichloroethene	<2.1	<0.53	Styrene	<4.5	<1.1
Hexane	<19	<5.3	Bromoform	<11	<1.1
Chloroform	2.5	0.52	Benzyl chloride	<0.27 k	<0.053 k
Ethyl acetate	<38	<11	1,3,5-Trimethylbenzene	<26	<5.3
Tetrahydrofuran	<3.1	<1.1	1,2,4-Trimethylbenzene	<26	<5.3
2-Butanone (MEK)	<31	<11	1,3-Dichlorobenzene	<3.2 k	<0.53 k
1,2-Dichloroethane (EDC)	<0.21	<0.053	1,4-Dichlorobenzene	<1.2 k	<0.2 k
1,1,1-Trichloroethane	<2.9	<0.53	1,2-Dichlorobenzene	<3.2 k	<0.53 k
Carbon tetrachloride	<1.7	<0.26	1,2,4-Trichlorobenzene	<3.9 k	<0.53 k
Benzene	<1.7	<0.53	Naphthalene	<1.4	<0.26
Cyclohexane	<36	<11	Hexachlorobutadiene	<1.1 k	<0.11 k

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Potter Air Sampling M0615.20.006
Date Collected:	Not Applicable	Lab ID:	03-1461 MB
Date Analyzed:	06/26/23	Data File:	062612.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.2	<0.7	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	<0.99	<0.2	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044	<0.02	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<8.2 k	<2 k
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5 k	<4 k	Toluene	<7.5	<2
Acrolein	<0.11 k	<0.05 k	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	<4.8	<2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12 k	<4 k	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<1.5	<0.2	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7 k	<2 k	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	<0.049	<0.01	Benzyl chloride	<0.052 k	<0.01 k
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6 k	<0.1 k
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23 k	<0.038 k
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6 k	<0.1 k
Carbon tetrachloride	<0.31	<0.05	1,2,4-Trichlorobenzene	<0.74 k	<0.1 k
Benzene	<0.32	<0.1	Naphthalene	<0.26	<0.05
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21 k	<0.02 k

Date of Report: 06/27/23
Date Received: 06/13/23
Project: Potter Air Sampling M0615.20.006, F&BI 306193
Date Extracted: 06/27/23
Date Analyzed: 06/27/23

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Results Reported as % Helium

Sample ID Laboratory ID	Helium
TWA-SV-45-061223 306193-01	<0.6
TWA-SV-35-061223 306193-02	<0.6
TWA-SV-36-061223 306193-03	<0.6
Method Blank 03-1519 MB	<0.6

Date of Report: 06/27/23
Date Received: 06/13/23
Project: Potter Air Sampling M0615.20.006, F&BI 306193

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: 306327-01 1/5.6 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
APH EC5-8 aliphatics	ug/m3	430	420	2
APH EC9-12 aliphatics	ug/m3	710	730	3
APH EC9-10 aromatics	ug/m3	<140	<140	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	67	74	70-130
APH EC9-12 aliphatics	ug/m3	67	99	70-130
APH EC9-10 aromatics	ug/m3	67	96	70-130

Date of Report: 06/27/23
Date Received: 06/13/23
Project: Potter Air Sampling M0615.20.006, F&BI 306193

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 306327-01 1/5.6 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Propene	ug/m3	52	56	7
Dichlorodifluoromethane	ug/m3	<5.5	<5.5	nm
Chloromethane	ug/m3	<21	<21	nm
F-114	ug/m3	<12	<12	nm
Vinyl chloride	ug/m3	<1.4	<1.4	nm
1,3-Butadiene	ug/m3	5.9	6.0	2
Butane	ug/m3	<27	<27	nm
Bromomethane	ug/m3	<22	<22	nm
Chloroethane	ug/m3	<15	<15	nm
Vinyl bromide	ug/m3	<2.4	<2.4	nm
Ethanol	ug/m3	<42	<42	nm
Acrolein	ug/m3	2.4	2.4	0
Pentane	ug/m3	<33	<33	nm
Trichlorofluoromethane	ug/m3	<13	<13	nm
Acetone	ug/m3	70	74	6
2-Propanol	ug/m3	<48	<48	nm
1,1-Dichloroethene	ug/m3	<2.2	<2.2	nm
trans-1,2-Dichloroethene	ug/m3	<2.2	<2.2	nm
Methylene chloride	ug/m3	<190	<190	nm
t-Butyl alcohol (TBA)	ug/m3	<68	<68	nm
3-Chloropropene	ug/m3	<18	<18	nm
CFC-113	ug/m3	<8.6	<8.6	nm
Carbon disulfide	ug/m3	<35	<35	nm
Methyl t-butyl ether (MTBE)	ug/m3	<40	<40	nm
Vinyl acetate	ug/m3	<39	<39	nm
1,1-Dichloroethane	ug/m3	<2.3	<2.3	nm
cis-1,2-Dichloroethene	ug/m3	<2.2	<2.2	nm
Hexane	ug/m3	<20	<20	nm
Chloroform	ug/m3	0.41	0.41	0
Ethyl acetate	ug/m3	<40	<40	nm
Tetrahydrofuran	ug/m3	<3.3	<3.3	nm
2-Butanone (MEK)	ug/m3	<33	<33	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.23	<0.23	nm
1,1,1-Trichloroethane	ug/m3	<3.1	<3.1	nm
Carbon tetrachloride	ug/m3	<1.8	<1.8	nm
Benzene	ug/m3	2.5	2.5	0
Cyclohexane	ug/m3	<39	<39	nm
1,2-Dichloropropane	ug/m3	<1.3	<1.3	nm
1,4-Dioxane	ug/m3	<2	<2	nm
2,2,4-Trimethylpentane	ug/m3	<26	<26	nm

Date of Report: 06/27/23
Date Received: 06/13/23
Project: Potter Air Sampling M0615.20.006, F&BI 306193

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 306327-01 1/5.6 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Methyl methacrylate	ug/m3	<23	<23	nm
Heptane	ug/m3	<23	<23	nm
Bromodichloromethane	ug/m3	<0.38	<0.38	nm
Trichloroethene	ug/m3	<0.6	<0.6	nm
cis-1,3-Dichloropropene	ug/m3	<5.1	<5.1	nm
4-Methyl-2-pentanone	ug/m3	<46	<46	nm
trans-1,3-Dichloropropene	ug/m3	<2.5	<2.5	nm
Toluene	ug/m3	<42	<42	nm
1,1,2-Trichloroethane	ug/m3	<0.31	<0.31	nm
2-Hexanone	ug/m3	<23	<23	nm
Tetrachloroethene	ug/m3	<38	<38	nm
Dibromochloromethane	ug/m3	<0.48	<0.48	nm
1,2-Dibromoethane (EDB)	ug/m3	<0.43	<0.43	nm
Chlorobenzene	ug/m3	<2.6	<2.6	nm
Ethylbenzene	ug/m3	<2.4	<2.4	nm
1,1,2,2-Tetrachloroethane	ug/m3	<0.77	<0.77	nm
Nonane	ug/m3	<29	<29	nm
Isopropylbenzene	ug/m3	<55	<55	nm
2-Chlorotoluene	ug/m3	<29	<29	nm
Propylbenzene	ug/m3	<28	<28	nm
4-Ethyltoluene	ug/m3	<28	<28	nm
m,p-Xylene	ug/m3	<4.9	<4.9	nm
o-Xylene	ug/m3	<2.4	<2.4	nm
Styrene	ug/m3	<4.8	<4.8	nm
Bromoform	ug/m3	<12	<12	nm
Benzyl chloride	ug/m3	<0.29	<0.29	nm
1,3,5-Trimethylbenzene	ug/m3	<28	<28	nm
1,2,4-Trimethylbenzene	ug/m3	<28	<28	nm
1,3-Dichlorobenzene	ug/m3	<3.4	<3.4	nm
1,4-Dichlorobenzene	ug/m3	<1.3	<1.3	nm
1,2-Dichlorobenzene	ug/m3	<3.4	<3.4	nm
1,2,4-Trichlorobenzene	ug/m3	<4.2	<4.2	nm
Naphthalene	ug/m3	<1.5	<1.5	nm
Hexachlorobutadiene	ug/m3	<1.2	<1.2	nm

Date of Report: 06/27/23
Date Received: 06/13/23
Project: Potter Air Sampling M0615.20.006, F&BI 306193

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Propene	ug/m3	23	126	70-130
Dichlorodifluoromethane	ug/m3	67	111	70-130
Chloromethane	ug/m3	28	81	70-130
F-114	ug/m3	94	128	70-130
Vinyl chloride	ug/m3	35	104	70-130
1,3-Butadiene	ug/m3	30	103	70-130
Butane	ug/m3	32	102	70-130
Bromomethane	ug/m3	52	110	70-130
Chloroethane	ug/m3	36	103	70-130
Vinyl bromide	ug/m3	59	109	70-130
Ethanol	ug/m3	25	110	70-130
Acrolein	ug/m3	31	102	70-130
Pentane	ug/m3	40	99	70-130
Trichlorofluoromethane	ug/m3	76	116	70-130
Acetone	ug/m3	32	105	70-130
2-Propanol	ug/m3	33	84	70-130
1,1-Dichloroethene	ug/m3	54	104	70-130
trans-1,2-Dichloroethene	ug/m3	54	105	70-130
Methylene chloride	ug/m3	94	117	70-130
t-Butyl alcohol (TBA)	ug/m3	41	91	70-130
3-Chloropropene	ug/m3	42	102	70-130
CFC-113	ug/m3	100	119	70-130
Carbon disulfide	ug/m3	42	108	70-130
Methyl t-butyl ether (MTBE)	ug/m3	49	100	70-130
Vinyl acetate	ug/m3	48	93	70-130
1,1-Dichloroethane	ug/m3	55	106	70-130
cis-1,2-Dichloroethene	ug/m3	54	104	70-130
Hexane	ug/m3	48	99	70-130
Chloroform	ug/m3	66	104	70-130
Ethyl acetate	ug/m3	49	98	70-130
Tetrahydrofuran	ug/m3	40	105	70-130
2-Butanone (MEK)	ug/m3	40	99	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	101	70-130
1,1,1-Trichloroethane	ug/m3	74	107	70-130
Carbon tetrachloride	ug/m3	85	107	70-130
Benzene	ug/m3	43	103	70-130
Cyclohexane	ug/m3	46	101	70-130
1,2-Dichloropropane	ug/m3	62	103	70-130
1,4-Dioxane	ug/m3	49	88	70-130
2,2,4-Trimethylpentane	ug/m3	63	103	70-130

Date of Report: 06/27/23
Date Received: 06/13/23
Project: Potter Air Sampling M0615.20.006, F&BI 306193

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl methacrylate	ug/m3	55	102	70-130
Heptane	ug/m3	55	98	70-130
Bromodichloromethane	ug/m3	90	105	70-130
Trichloroethene	ug/m3	73	103	70-130
cis-1,3-Dichloropropene	ug/m3	61	111	70-130
4-Methyl-2-pentanone	ug/m3	55	88	70-130
trans-1,3-Dichloropropene	ug/m3	61	103	70-130
Toluene	ug/m3	51	98	70-130
1,1,2-Trichloroethane	ug/m3	74	104	70-130
2-Hexanone	ug/m3	55	92	70-130
Tetrachloroethene	ug/m3	92	109	70-130
Dibromochloromethane	ug/m3	120	109	70-130
1,2-Dibromoethane (EDB)	ug/m3	100	105	70-130
Chlorobenzene	ug/m3	62	109	70-130
Ethylbenzene	ug/m3	59	100	70-130
1,1,2,2-Tetrachloroethane	ug/m3	93	105	70-130
Nonane	ug/m3	71	97	70-130
Isopropylbenzene	ug/m3	66	110	70-130
2-Chlorotoluene	ug/m3	70	103	70-130
Propylbenzene	ug/m3	66	105	70-130
4-Ethyltoluene	ug/m3	66	98	70-130
m,p-Xylene	ug/m3	120	94	70-130
o-Xylene	ug/m3	59	103	70-130
Styrene	ug/m3	58	103	70-130
Bromoform	ug/m3	140	108	70-130
Benzyl chloride	ug/m3	70	107	70-130
1,3,5-Trimethylbenzene	ug/m3	66	98	70-130
1,2,4-Trimethylbenzene	ug/m3	66	99	70-130
1,3-Dichlorobenzene	ug/m3	81	109	70-130
1,4-Dichlorobenzene	ug/m3	81	108	70-130
1,2-Dichlorobenzene	ug/m3	81	109	70-130
1,2,4-Trichlorobenzene	ug/m3	100	101	70-130
Naphthalene	ug/m3	71	94	70-130
Hexachlorobutadiene	ug/m3	140	108	70-130

Date of Report: 06/27/23
Date Received: 06/13/23
Project: Potter Air Sampling M0615.20.006, F&BI 306193

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR HELIUM USING METHOD ASTM D1946

Laboratory Code: 306193-03 (Duplicate)

Analyte	Sample Result (%)	Duplicate Result (%)	Relative Percent Difference	Acceptance Criteria
Helium	<0.6	<0.6	nm	0-20

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

306193

SAMPLE CHAIN OF CUSTODY

ME 06-13-23

Page # 1 of 1

Report To Audrey Hackett

Company Maul Foster & Alongi, Inc.

Address 2815 2nd Ave, Ste 540

City, State, ZIP Seattle, WA 98121

Phone (206) 331-1835 Email ahackett@maulfoster.com

SAMPLERS (signature): Amanda Bixby

PROJECT NAME & ADDRESS: Potter Air Sampling

PO #: M0615.20.006

NOTES: One 1-L Summa canister & one 1-L Tedlar per sample.

INVOICE TO: accounting@maulfoster.com

TURNAROUND TIME
☒ Standard
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Default: Clean following final report delivery
Hold (Fee may apply):

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	CH_4, O_2, CO_2 by EPA 3C	Notes
TWA-SV-45-061223	01	9563	68	IA / (SG)	6/12/23	-30+	1346	-5	1351	X			X	X	X	
TWA-SV-35-061223	02	9893	66	IA / (SG)	6/12/23	-30+	1450	-5	1455	X			X	X	X	
TWA-SV-36-061223	03	9882	52	IA / (SG)	6/12/23	-30	1531	-5	1536	X			X	X	X	
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												Samples received at 22 °C
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Amanda Bixby	Amanda Bixby	MFA	6/13/23	835
Received by: D. M.	Liz Webber-Bruya	F:B	6/13/23	835
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
5500 4th Avenue South
Seattle, WA 98108
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COCTO-15.DOC

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 306193
Work Order Number: 2306185

June 20, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 3 sample(s) on 6/13/2023 for the analyses presented in the following report.

Major Gases by EPA Method 3C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *06/20/2023*

CLIENT: Friedman & Bruya
Project: 306193
Work Order: 2306185

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2306185-001	TWA-SV-45-061223	06/12/2023 1:51 PM	06/13/2023 1:30 PM
2306185-002	TWA-SV-35-061223	06/12/2023 2:55 PM	06/13/2023 1:30 PM
2306185-003	TWA-SV-36-061223	06/12/2023 3:36 PM	06/13/2023 1:30 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2306185**
Date: **6/20/2023**

CLIENT: Friedman & Bruya
Project: 306193

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Major gases are reported as % ratio of the Major Gases analyzed (Carbon dioxide, Carbon Monoxide, Methane, Nitrogen, Oxygen and Hydrogen).

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS). The LCS is processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Note: The estimated BTU calculation is based off of the methane result.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2306185**
Date Reported: **6/20/2023**

CLIENT: Friedman & Bruya
Project: 306193

Lab ID: 2306185-002 **Collection Date:** 6/12/2023 2:55:00 PM
Client Sample ID: **TWA-SV-35-061223** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R84657		Analyst: NR
Carbon Dioxide	13.1	0.0500		%	1	6/13/2023 4:35:00 PM
Methane	0.818	0.0500		%	1	6/13/2023 4:35:00 PM
Oxygen	1.57	0.0500		%	1	6/13/2023 4:35:00 PM

Lab ID: 2306185-003 **Collection Date:** 6/12/2023 3:36:00 PM
Client Sample ID: **TWA-SV-36-061223** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R84657		Analyst: NR
Carbon Dioxide	2.86	0.0500		%	1	6/13/2023 4:49:00 PM
Methane	ND	0.0500		%	1	6/13/2023 4:49:00 PM
Oxygen	16.2	0.0500		%	1	6/13/2023 4:49:00 PM

Work Order: 2306185
CLIENT: Friedman & Bruya
Project: 306193

QC SUMMARY REPORT

Major Gases by EPA Method 3C

Sample ID: **LCS-R84657** SampType: **LCS** Units: **%** Prep Date: **6/13/2023** RunNo: **84657**
Client ID: **LCSW** Batch ID: **R84657** Analysis Date: **6/13/2023** SeqNo: **1767077**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	102	0.0500	100.0	0	102	70	130				
Methane	101	0.0500	100.0	0	101	70	130				
Oxygen	101	0.0500	100.0	0	101	70	130				

Sample ID: **2305550-003AREP** SampType: **REP** Units: **%** Prep Date: **6/13/2023** RunNo: **84657**
Client ID: **BATCH** Batch ID: **R84657** Analysis Date: **6/13/2023** SeqNo: **1767076**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	42.1	0.100						44.63	5.84	30	D
Methane	60.0	0.100						62.30	3.75	30	D
Oxygen	0.165	0.100						0.1854	11.9	30	D

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2306185
Logged by:	Clare Griggs	Date Received:	6/13/2023 1:30:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:	Michael Erdahl	Date:	6/13/2023
By Whom:	Morgan Wilson	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	Tedlar 001A leaking, cannot run major gas		
Client Instructions:	Okay, will create another when TO-15 testing complete		

17. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2306185

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: Fremont

PROJECT NAME/NO.: 306193

PO #: D-328

REMARKS: EQuIS 4 EDD

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: major gases CH4, CO2, O2	COD	Nitrate	Sulfate	CO2	dissolved methane					Notes
TWA-SV-45-061223		6/12/2023	1351	vapor	1	x										
TWA-SV-35-061223		6/12/2023	1455	vapor	1	x										
TWA-SV-36-061223		6/12/2023	1536	vapor	1	x										

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	6/13/23	0900
Received by:		Alli Miller	FAI	6/13/23	1330
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 306193
Work Order Number: 2306468

July 05, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 6/27/2023 for the analyses presented in the following report.

Major Gases by EPA Method 3C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *07/10/2023*

CLIENT: Friedman & Bruya
Project: 306193
Work Order: 2306468

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2306468-001	TWA-SV-45-061223	06/12/2023 1:51 PM	06/27/2023 2:36 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2306468**
Date: **7/5/2023**

CLIENT: Friedman & Bruya
Project: 306193

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Major gases are reported as % ratio of the Major Gases analyzed (Carbon dioxide, Carbon Monoxide, Methane, Nitrogen, Oxygen and Hydrogen).

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS). The LCS is processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Note: The estimated BTU calculation is based off of the methane result.

7/10/2023: Revision 1 includes report updates including sampling date/time, select list change and COC edits.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2306468**
Date Reported: **7/5/2023**

Client: Friedman & Bruya
Collection Date: 6/12/2023 1:51:00 PM
Project: 306193
Lab ID: 2306468-001
Matrix: Air
Client Sample ID: **TWA-SV-45-061223**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R85020		Analyst: NR
Carbon Dioxide	2.64	0.0500		%	1	6/29/2023 3:01:00 PM
Methane	ND	0.0500		%	1	6/29/2023 3:01:00 PM
Oxygen	18.0	0.0500		%	1	6/29/2023 3:01:00 PM

Work Order: 2306468
CLIENT: Friedman & Bruya
Project: 306193

QC SUMMARY REPORT

Major Gases by EPA Method 3C

Sample ID: **LCS-R85020** SampType: **LCS** Units: **%** Prep Date: **6/29/2023** RunNo: **85020**
Client ID: **LCSW** Batch ID: **R85020** Analysis Date: **6/29/2023** SeqNo: **1774648**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	97.8	0.0500	100.0	0	97.8	70	130				
Methane	97.8	0.0500	100.0	0	97.8	70	130				
Oxygen	98.8	0.0500	100.0	0	98.8	70	130				

Sample ID: **2306406-001AREP** SampType: **REP** Units: **%** Prep Date: **6/29/2023** RunNo: **85020**
Client ID: **BATCH** Batch ID: **R85020** Analysis Date: **6/29/2023** SeqNo: **1774645**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	24.9	0.0500						24.41	1.85	30	
Methane	38.1	0.0500						37.37	1.91	30	
Oxygen	0.138	0.0500						0.1527	10.4	30	

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2306468
Logged by:	Morgan Wilson	Date Received:	6/27/2023 2:36:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2306468

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
Fremont

PROJECT NAME/NO.	PO #
306193	D-357

REMARKS
EQuIS 4
Tier IV package

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: major gases	COD	Nitrate	Sulfate	CO2	dissolved methane					Notes
TWA-SV-45-061223		6/27/2023	1040	vapor	1	x										Dilution = 1.8

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	6/27/23	0630
Received by:		Ashley		6/27/23	1436
Relinquished by:					
Received by:					

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2306468

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
Fremont

PROJECT NAME/NO.	PO #
306193	D-357

REMARKS Sample collected in a canister on 6/12 and portioned into a tedlar bag 6/27
EQuIS 4 Tier IV package

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: * major gases	COD	Nitrate	Sulfate	CO2	dissolved methane					Notes
TWA-SV-45-061223		~~6/27/2023~~	~~1040~~	vapor	1	x										Dilution = 1.8
		6/12/2023	1351													*CH4, CO2, O2

Edits per M.E. 7/6/2023 -BB

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	6/27/23	0630
Received by:		Ashley Salvemini	Fremont Analytical	6/27/23	1436
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

Appendix E

Data Validation Memorandum

MAUL
FOSTER
ALONGI

Data Quality Assurance/Quality Control Review

Project No. M0615.20.006 | July 26, 2023 | Port of Tacoma

Maul Foster & Alongi, Inc. (MFA), conducted an independent review of the quality of tier II analytical results for indoor air, ambient air, sub-slab soil vapor, and associated quality control samples collected on June 11 and 12, 2023, at the former Potter Property at 1801 E Alexander Avenue in Tacoma, Washington.

Friedman & Bruya, Inc. (F&B), and Fremont Analytical, Inc. (Fremont), performed the analyses. MFA reviewed F&B report numbers 306187; 306188; and 306193; subcontracted Fremont report numbers 2306186 and 2306185, which are appended to F&B reports 306188 and 306193, respectively; and subcontracted Fremont report number 2306468, which is reported separately. The analyses performed and the samples analyzed are listed in the following tables. Samples submitted on hold are indicated below. Not all analyses were performed on all samples.

Analysis	Reference
Air-phase petroleum hydrocarbons	MA-APH
Helium	ASTM D1946
Major gases	EPA 3C
Volatile organic compounds	EPA TO-15

Notes
ASTM = ASTM International.
EPA = U.S. Environmental Protection Agency.
MA-APH = Massachusetts Department of Environmental Protection Method for the Determination of Air-Phase Petroleum Hydrocarbons.
TO = toxic organics.

Samples Analyzed		
Report 306187		
TWA-IA-01-061123	TWA-IA-06-061123	TWA-AA-04-061123 (hold)
TWA-IA-02-061123	TWA-IA-DUP-061123	TWA-AA-05-061123 (hold)
TWA-IA-03-061123	TWA-AA-01-061123 (hold)	TWA-AA-06-061123
TWA-IA-04-061123	TWA-AA-02-061123	TWA-AA-07-061123 (hold)
TWA-IA-05-061123	TWA-AA-03-061123 (hold)	TWA-AA-08-061123 (hold)
Report 306188/2306186		
TWA-SV-43-061223	TWA-SV-DUP-061223	TWA-SV-42-061223
TWA-SV-41-061223	TWA-SV-44-061223	--
Report 306193/2306185		
TWA-SV-45-061223	TWA-SV-35-061223	TWA-SV-36-061223
Report 2306468		
TWA-SV-45-061223	--	--

Data Qualification

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) guidelines for data review (EPA 2020) and appropriate laboratory- and method-specific guidelines (EPA 1986, F&B 2022, Fremont 2020).

Data validation procedures were modified, as appropriate, to accommodate quality control requirements for methods that EPA data review procedures do not specifically address (e.g., Massachusetts Department of Environmental Protection Method for the Determination of Air-Phase Petroleum Hydrocarbons [MA-APH]).

Based on the results of the data quality review procedures described below, the data, with the appropriate final data qualifiers assigned, are considered acceptable for their intended use. Final data qualifiers represent qualifiers originating from the laboratory and accepted by the reviewer, and data qualifiers assigned by the reviewer during validation.

Final data qualifiers:

- J = result is estimated.
- U = result is non-detect at the method reporting limit (MRL).
- UJ = result is non-detect with an estimated MRL.

The reviewer confirmed that sub-slab soil vapor samples were collected under a helium shroud to detect leaks in the collection system. According to reports 306188 and 306193, samples TWA-SV-43-061223, TWA-SV-41-061223, TWA-SV-DUP-061223, TWA-SV-42-061223, TWA-SV-45-061223, TWA-SV-35-061223, and TWA-SV-36-061223 were non-detect for helium by ASTM International [ASTM] Method D1946. According to report 306188, sample TWA-SV-44-061223 does not have any helium results. The reviewer confirmed with the laboratory that this was due to a laboratory system error. The sample was not able to be reanalyzed within the method-recommended holding time. Helium was screened in the field during sample collection. For sample TWA-SV-44-061223, helium was detected during the sample purge at 425 parts per million and the shroud had 40.6 percent helium, so the helium in the sample is likely less than five percent of the concentration under in the shroud; thus the impact on sample quality is presumed to be low. The reviewer qualified the associated sample results with J or UJ, as shown in the following table.

Reports	Sample	Analyses	Original Results	Qualification
306188 2306186	TWA-SV-44-061223	EPA TO-15 MA-APH EPA 3C	Detected	J
			Non-detect	UJ

Notes
EPA = U.S. Environmental Protection Agency.
J = result is estimated.
MA-APH = Massachusetts Department of Environmental Protection Method for the Determination of Air-Phase Petroleum Hydrocarbons.
UJ = result is non-detect with an estimated method reporting limit.

According to the case narrative accompanying report 306187, nonpetroleum compounds identified in the air-phase hydrocarbon ranges were subtracted, in accordance with the MA-APH method. Qualification by the reviewer was not required,

According to report 306187, the EPA Method TO-15 propene calibration standard exceeded acceptance criteria with a high bias. All associated sample results were non-detect; thus, qualification by the reviewer was not required.

According to report 306187, the EPA Method TO-15 naphthalene result for sample TWA-AA-06-061123 was flagged as estimated because of an associated calibration result that was outside acceptance criteria. The result was qualified by the laboratory as estimated because of a result

below the standard reporting limit, and final qualification by the reviewer is shown in the Method Blanks section below.

According to report 306188, the EPA Method TO-15 ethanol calibration standard exceeded acceptance criteria with a high bias. All associated sample results were non-detect; thus, qualification by the reviewer was not required.

According to report 306188, the EPA Method TO-15 tetrachloroethene results for samples TWA-SV-41-061223, TWA-SV-DUP-061223, and TWA-SV-44-061223 were above the calibration range of the instrument. The reviewer qualified the sample results with J, as shown in the following table.

Report	Sample	Analyte	Original Result (ug/m^3)	Qualified Result (ug/m^3)
306188	TWA-SV-41-061223	Tetrachloroethene	4,900	4,900 J
	TWA-SV-DUP-061223		4,900	4,900 J
	TWA-SV-44-061223		6,100	6,100 J[(a)]

Notes
J = result is estimated.
ug/m^3 = micrograms per cubic meter.
[(a)]Final qualification based on results above calibration and helium field screening results.

According to report 306193, some MA-APH and EPA Method TO-15 results for samples TWA-SV-35-061223 and TWA-SV-45-061223 were above the calibration range of the instrument. The reviewer qualified the sample results with J, as shown in the following table.

Report	Sample	Analyte	Original Result (ug/m^3)	Qualified Result (ug/m^3)
306193	TWA-SV-35-061223	C5-C8 Aliphatic hydrocarbons	670,000	670,000 J
		C9-C12 Aliphatic hydrocarbons	230,000	230,000 J
		2,2,4-Trimethylpentane	42,000	42,000 J
		Cyclohexane	20,000	20,000 J
		Heptane	29,000	29,000 J
		Hexane	24,000	24,000 J
	TWA-SV-45-061223	Tetrachloroethene	2,300	2,300 J

Notes
J = result is estimated.
ug/m^3 = micrograms per cubic meter.

According to report 306193, several EPA Method TO-15 analytes were associated with calibration standards that exceeded acceptance criteria with a high bias. All associated sample results were non-detect; thus, qualification by the reviewer was not required.

Sample Conditions

Sample Custody

In reports 306187, 306188, and 2306468, the subcontracted Fremont chain-of-custody (COC) forms show gaps between relinquishment by F&B and receipt by Fremont, while the sample login checklists accompanying the subcontracted reports indicate that samples were delivered directly by the client. The reviewer confirmed with the laboratory that the gap in custody is due to the no-contact drop-off protocol at Fremont, and that samples were dropped off by F&B in a secure sample receipt location at Fremont.

Fremont report 2306468 has two accompanying COC forms. The second COC form is a revision, included at MFA's request, that corrects the analyte list and the collection date and time and properly completes the sample receipt information.

Sample custody was appropriately documented on the remaining COC forms accompanying the reports.

Holding Times, Preservation, and Sample Storage

There are no preservation or temperature requirements for the sample matrices.

According to the COC accompanying report 306187, the gauge for sample TWA-IA-04-061123 was damaged. The reviewer confirmed with the sampler that the gauge on the Summa canister was damaged during sample collection, but the sample was not compromised; thus, qualification by the reviewer was not required.

According to the case narrative accompanying report 306193, sample TWA-SV-45-061223 had a compromised Tedlar bag. The reviewer confirmed with the laboratory that the Tedlar bag was leaking upon receipt at Fremont, and therefore EPA Method 3C analysis could not be performed from the original Tedlar bag. F&B prepared a second Tedlar bag from the sample TWA-SV-45-061223 Summa canister after analysis at F&B was completed. EPA Method 3C results for this sample are included in Fremont report 2306468. According to the revised COC form accompanying report 2306468, the sample was initially collected in a Summa canister on June 12, 2023, and was portioned into the new Tedlar bag on June 27, 2023. EPA Method 3C analysis was performed from the new Tedlar bag within the method-recommended 72-hour holding time. Qualification by the reviewer was not required.

The remaining samples were stored appropriately, and extractions and analyses were performed within the recommended holding times.

Reporting Limits

The laboratories evaluated results to MRLs. Samples that required dilutions because of high analyte concentrations, matrix interferences, and/or dilutions necessary for preparation and/or analysis were reported with raised MRLs.

In reports 306187 and 306188, F&B noted that some EPA Method TO-15 results were reported below standard reporting limits and are considered estimates. The laboratory flagged these samples with J, and the reviewer accepted the laboratory qualification. Final qualification for these results is UJ for non-detects and J for detects, except for naphthalene results in report 306187, which are qualified by the reviewer in the Method Blanks section below.

Blanks

Method Blanks

Laboratory method blanks are used to assess whether laboratory contamination was introduced during sample preparation and analysis. Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the laboratory method blanks were associated with all samples prepared in the analytical batch.

In subcontracted reports 2306186 and 2306185, Fremont did not report laboratory method blanks for EPA Method 3C. The method does not require a laboratory method blank.

According to report 306187, the EPA Method TO-15 laboratory method blank had a naphthalene detection below the MRL, at a concentration of 0.068 micrograms per cubic meter. All associated sample results were detected below the MRL and were qualified by the reviewer with U, as not detected at the MRL, as shown in the following table.

Report	Sample	Analyte	Method Blank Result (ug/m³)	Original Result (ug/m³)	Qualified Result (ug/m³)
306187	TWA-IA-01-061123	Naphthalene	0.068 J	0.074 J	0.26 U
	TWA-IA-02-061123			0.084 J	0.26 U
	TWA-IA-03-061123			0.095 J	0.26 U
	TWA-IA-04-061123			0.11 J	0.26 U
	TWA-IA-05-061123			0.14 J	0.26 U
	TWA-IA-06-061123			0.17 J	0.26 U
	TWA-IA-DUP-061123			0.11 J	0.26 U
	TWA-AA-02-061123			0.12 J	0.26 U
	TWA-AA-06-061123			0.082 J	0.31 U

Notes
J = result is estimated.
U = result is non-detect at the method reporting limit.
ug/m³ = micrograms per cubic meter.

All remaining laboratory method blank results were non-detect.

Laboratory Control Sample and Laboratory Control Sample Duplicate Results

A laboratory control sample (LCS) and a laboratory control sample duplicate (LCSD) are spiked with target analytes to provide information about laboratory precision and accuracy.

F&B and Fremont did not report LCSDs for any methods; the reviewer evaluated laboratory precision using laboratory duplicate results. F&B did not report LCS results for ASTM D1946, as it is not required by the method; the reviewer confirmed with the laboratory that initial calibration and continuing calibration passed for this method.

According to report 306187, the EPA Method TO-15 LCS result for propene was above the upper percent recovery acceptance limit of 130 percent, at 134 percent. All associated sample results were non-detect; thus, qualification by the reviewer was not required.

According to report 306188, the EPA Method TO-15 LCS result for ethanol was above the upper percent recovery acceptance limit of 130 percent, at 133 percent. All associated sample results were non-detect; thus, qualification by the reviewer was not required.

All remaining LCS results were within acceptance limits for percent recovery.

Laboratory Duplicate Results

Laboratory duplicate results are used to evaluate laboratory precision. All laboratory duplicate samples were prepared and analyzed at the required frequency. Fremont reported laboratory duplicates as a sample type of “REP.”

Laboratory duplicate results greater than five times the MRL were evaluated using laboratory relative percent difference (RPD) control limits. Laboratory duplicate results less than five times the MRL, including non-detects, were evaluated using a control limit of the MRL of the parent sample; the

absolute difference of the laboratory duplicate sample result and the parent sample result, or the MRL for non-detects, was compared to the MRL of the parent sample.

According to report 306187, the EPA Method TO-15 laboratory duplicate prepared with sample TWA-IA-01-061123 had an acetone RPD above the acceptance criteria of 30 percent, at 44 percent. Since indoor and ambient air samples can be considered similar matrices with low heterogeneity, the reviewer qualified all sample acetone results in report 306187 based on the laboratory duplicate result. Qualifications by the reviewer are shown in the following table.

Report	Sample	Analyte	Original Result (ug/m^3)	Qualified Result (ug/m^3)
306187	TWA-IA-01-061123	Acetone	13	13 J
	TWA-IA-02-061123		15	15 J
	TWA-IA-03-061123		13	13 J
	TWA-IA-04-061123		10	10 J
	TWA-IA-05-061123		15	15 J
	TWA-IA-06-061123		14	14 J
	TWA-IA-DUP-061123		9.7	9.7 J
	TWA-AA-02-061123		13	13 J
	TWA-AA-06-061123		14	14 J

Notes
J = result is estimated.
ug/m^3 = micrograms per cubic meter.

All remaining laboratory duplicate results met the acceptance criteria.

Matrix Spike and Matrix Spike Duplicate Results

Matrix spike and matrix spike duplicate results are used to evaluate laboratory precision, accuracy, and the effect of the sample matrix on sample preparation and analysis.

F&B and Fremont did not report matrix spikes or matrix spike duplicates, as they are not required by the methods.

Surrogate Recovery Results

The samples were spiked with surrogate compounds to evaluate laboratory performance of individual samples for organic analyses.

All surrogate results were within percent recovery acceptance limits.

Field Duplicate Results

Field duplicate samples measure both field and laboratory precision. The following field duplicate and parent sample pairs were submitted for analysis:

Report	Parent Sample	Field Duplicate Sample
306187	TWA-IA-01-061123	TWA-IA-DUP-061123
306188, 2306186	TWA-SV-41-061223	TWA-SV-DUP-061223

MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL or 50 percent RPD for results that are greater than five times the MRL. RPD was not evaluated when

both results in the sample pair were non-detect. When one result in the sample pair was non-detect, RPD was evaluated using the MRL of the non-detect result.

All field duplicate results met the RPD acceptance criteria.

Data Package

The data package was reviewed for transcription errors, omissions, and anomalies.

At MFA's request, Fremont report 2306468 was revised on June 10, 2023, to include a revised COC form, remove extraneous analytes from the report, and update the sample collection date and time.

F&B released a revision for report 306188 on July 26, 2023, to remove the ASTM Method D1946 results for sample TWA-SV-44-061223 due to a laboratory system error,

No other issues were found.

References

EPA. 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* EPA publication SW-846. 3rd ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), VI phase III (2019), VII phase I (2019), and VII phase II (2020).

EPA. 2020. *National Functional Guidelines for Organic Superfund Methods Data Review.* EPA 540-R-20-005. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

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