Completion Report—AOC 1

Northern State Multi Service Center
Sedro-Woolley, Washington

Agreed Order No. DE 16309
Cleanup Site ID: 10048

Prepared for:

Port of Skagit

June 18, 2024
Project No. M0624.04.022

Prepared by:

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MAUL FOSTER ALONGI

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Sedro-Woolley, Washington

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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.

This digital seal certifies the signatory and document content.

06-18-2024

Erik Bakkom, PE
Principal Engineer

Carolyn Wise, LHG
Project Hydrogeologist

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Abbreviations

AO	Agreed Order No. DE 16309
AOC 1	the former laundry building area of concern
cis-1,2-DCE	cis-1,2-dichloroethene
cVOC	chlorinated volatile organic compound
1,2-DCA	dichloroethane
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
IAWP	interim action work plan
MFA	Maul Foster & Alongi, Inc.
MTCA	Model Toxics Control Act
PCE	tetrachloroethene
the Port	Port of Skagit
the Property	2070 Northern State Road in Sedro-Woolley, Washington
RI	remedial investigation
the Site	Northern State Multi Service Center
SSDS	sub-slab depressurization system
SQER	small quantity emission rate
TCE	trichloroethene
ug/m^3	micrograms per cubic meter
VOC	volatile organic compound
WAC	Washington Administrative Code

1 Introduction

On behalf of the Port of Skagit (the Port), Maul Foster & Alongi, Inc. (MFA), has prepared this completion report summarizing the vapor intrusion interim action and first quarterly post-installation compliance monitoring event completed at the former laundry building area of concern (AOC 1) at the Northern State Multi Service Center (former Northern State Hospital site) (the Site). This Site is located at the Sedro-Woolley Innovation for Tomorrow Center property at 2070 Northern State Road in Sedro-Woolley, Washington (the Property) (see Figure 1-1). The Site is listed with the Washington State Department of Ecology (Ecology) under facility site ID 65415931 and cleanup site ID 10048.

1.1 Regulatory Framework and Purpose

The Port entered into Agreed Order No. DE 16309 (AO) with Ecology, which describes interim remedial actions to be completed at the Site. The scope of work for the AOC 1 interim action (described in Exhibit B of the 2019 AO) was revised due to an updated understanding of geologic and environmental conditions at the Site. Therefore, the AO was amended to reflect these changes prior to the implementation of the interim action at AOC 1. The AO Amendment was finalized on October 4, 2023.

The Port received a U.S. Environmental Protection Agency (EPA) cleanup grant to support the completion of interim cleanup actions at the Site, including the interim action for AOC 1. Interim actions were completed in general accordance with the interim action work plan (IAWP) (MFA 2023) and EPA requirements.

During previous investigations on the Site, AOC 1 was identified based on the presence of chlorinated solvents and degradation products (i.e., chlorinated volatile organic compounds [cVOCs]) in soil, groundwater, and soil gas underlying and adjacent to the former laundry building (MFA 2015, 2018). The former laundry building is currently occupied by occupational tenants as instructional classrooms. Indoor air sampling conducted to date indicate there is no current indoor air risk; however, potential degradation of the building slab in the future could increase the risk of inhalation exposure by building occupants.

The completed interim remedial action described in this report consisted of installing an active sub-slab depressurization system (SSDS), creating a negative pressure gradient to mitigate the risk of chemicals of potential concern in sub-slab soil gas from entering indoor air in the former laundry building. The objective of the SSDS is to mitigate potential future inhalation exposure risk for occupants and visitors in the former laundry building. Additional information regarding the Property background, site conditions, and preliminary cleanup standards are provided in the IAWP (MFA 2023).

This completion report includes the following elements, consistent with the requirements of Washington Administrative Code (WAC) 173-340-400:

- Records of construction techniques and materials used (Section 3.2) and tests performed (Sections 4.1 through 4.4).

- As-built reports documenting interim action construction details (see Figure 1-2).
- An opinion from the engineer, based on testing results and inspections, as to whether the cleanup action was completed in substantial compliance with the IAWP (see Section 5).

2 Background and Environmental Conditions

A summary of the Property description and history as well as geology and hydrogeology of the Site is provided in Sections 2 and 3, respectively, of the IAWP (MFA 2023).

AOC 1 includes the former laundry building and associated concentrations of cVOCs, including tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE), in soil, groundwater, and/or soil vapor (MFA 2022). While there are no records of dry-cleaning operations at the Site, the presence of PCE in soil, groundwater, and soil vapor in AOC 1 indicates that solvents containing PCE were likely used in the former laundry building.

Multiple investigations were completed to assess the nature and extent of contamination in soil, groundwater, soil gas, and air within AOC 1 (MFA 2014, 2015, 2018, 2022) (see Figure 2-1). Low detections of 1,2-dichloroethane (1,2-DCA) were identified in indoor and outdoor air samples collected during an April 2021 sampling event (MFA 2022). No other cVOCs have been detected in the analyzed indoor and outdoor air samples.

Sub-slab soil gas samples collected from permanent sub-slab sampling points SB01 and SB02 in 2015 and 2021 were analyzed for cVOCs (MFA 2015, 2022). PCE was detected in both sub-slab soil gas samples during sampling events in April and July 2021. TCE was detected in sub-slab soil gas from sampling point SB01 during the July 2021 event and in sampling point SB02 during the April 2021 event. No other cVOCs were detected in the sub-slab soil gas samples.

Concentrations of PCE and TCE have been detected in groundwater collected near the northeast portion of the former laundry building. Concentrations of cVOCs have not been detected in the monitoring wells upgradient or downgradient of the PCE and TCE detections in groundwater; therefore, it is unlikely that cVOC impacts are migrating to nearby surface water in Hansen Creek via groundwater flow. The absence of PCE detections or other breakdown products at other historical sample locations near the former laundry building suggests that the groundwater impacts are likely localized to an area in the direct vicinity of the northeast corner of the laundry building.

Laundry extractor machines and a trench drain are shown in the north portion of the building on the historical blueprint (see Appendix D of IAWP [MFA 2023]). Given the consistent detections of PCE and/or TCE in soil, groundwater, sub-slab soil vapor in this portion of the former laundry building, it is likely that the operation of these features is the source of the PCE in the area. A summary of soil, groundwater, soil gas, and air results collected prior to completion of the IAWP is provided as Figure 2-1.

Preliminary cleanup standards for the Site were developed based on the conceptual site model presented in the draft remedial investigation (RI) report (provided in Section 5 of the RI report; MFA

2022). Screening levels are presented in Table 3-3 of the IAWP (MFA 2023). Chemicals of potential concern in soil vapor in AOC 1 include the following cVOCs:

- 1,1-DCE
- 1,2-DCA
- cis-1,2-DCE
- PCE
- trans-1,2-DCE
- TCE
- vinyl chloride

The former laundry building is used by occupational tenants for instructional classrooms. Indoor air sampling conducted to date indicate there is no current indoor air risk; however, potential degradation of the building slab over time could increase the risk of inhalation exposure by building occupants.

3 Interim Remedial Action Construction

The interim remedial action completed at AOC 1 between December 2023 and February 2024 consisted of installing an active SSDS to mitigate potential future inhalation exposure risk for occupants and visitors in the former laundry building.

The objective of the SSDS was to create a negative pressure gradient to prevent cVOCs beneath the slab of the former laundry building from entering indoor air. The interim remedial action was followed by a post-installation compliance monitoring event, which is described in Section 4. The elements of the constructed remedial action are described below.

3.1 Site Preparation

Prior to the SSDS installation, public and private utility locates were conducted to evaluate the presence of subsurface utilities in the vicinity of the planned vent installation areas. Site controls were established in accordance with the Site health and safety plan (provided as Appendix A of the IAWP; MFA 2023), and the construction contractor's health and safety plan.

3.2 Sub-slab Depressurization System

ScoCon LLC (ScoCon) of Bellingham, Washington, completed installation of the SSDS between December 27, 2023, and February 2, 2024. Field photographs of the installation are provided in Appendix A. The primary construction work was conducted during a period of building vacancy to reduce exposure risk associated with construction activities (i.e., potential for increased vapor intrusion when coring through the slab for vent installation).

The SSDS was designed using EPA (EPA 1993) and City of Los Angeles Department of Building and Safety (City of Los Angeles 2010) guidance. The system consists of five 3-inch-diameter vertical vent riser pipes installed into the aggregate subgrade fill beneath the concrete building slab and connected to individual inline centrifugal fans (see Figure 1-2). The centrifugal fans create suction through the pipes and then vent collected soil gas through a riser pipe extending above the ceiling and into existing roof cupolas (see photographs in Appendix A).

The SSDS began operating on February 2, 2024.

Preliminary emissions calculations were updated using analytical data collected from the vent risers during the post-installation compliance monitoring event, as discussed in Section 4.2.

3.2.1 Vent Riser Sizing, Number, and Placement

Vent locations were selected to achieve the following:

- Be equally spaced throughout the treatment area,
- Stay out of high-traffic portions of the building to limit noise disruptions to building tenants due to fan operation,
- Remain accessible to facility staff for quarterly inspection and maintenance, and
- Avoid existing utilities and obstructions that run above the ceiling.

Five vent riser pipes were installed at the locations shown on Figure 3-1. Large granular material was placed into the receiving pit below the slab to ensure the even distribution of vacuum under the slab. One vent rise pipe (VENT03) required a location adjustment greater than 10 feet, as discussed in Section 3.2.4.

3.2.2 Fan Selection and Flow Rate

As recommended in the design, 4-inch FanTech Rn1 Series Round Inline Exhaust fans were installed at each vent riser. The fans were connected into existing circuits in the building by a licensed electrician. The FanTech Rn1 Series fans were selected due to their ability to resist overheating while operating under low pressure and low flow conditions that are expected below a building slab.

Fan operating conditions were assessed once the system was turned on and initial pressure measurements were collected, as described in Section 4.4. Vacuum at each vent riser and pressure differential at sub-slab vapor points were measured once the system was turned on.

Weather conditions during system assessment may impact the target vacuum conditions as they impact the pressure of indoor air. However, a minimum target vacuum of 0.025-0.035 inches across all measured points during mild weather conditions is considered sufficient to maintain an appropriate pressure differential between the indoor air and sub-slab vapor (EPA 1993).

3.2.3 Vent Riser Detail

Vent riser pipes were routed to penetrate through the roof into existing decorative cupolas on the building. Vent riser penetrations in the roof were a minimum of 10 feet away from or 3 feet above any windows, doors, or air intakes and extend through the vent flashing a minimum of 6 inches into the cupolas above the roof.

For each proposed vent location, a concrete core was removed for pipe installation. Concrete cores were no larger than one half inch greater in diameter than the diameter of the vent pipe. To increase contact with soil gas below the slab, a small hole approximately 6 to 18 inches in radius was created by removing the subgrade material from below the slab prior to the installation of the vent pipes. Sub-grade material generally consisted of gravel to gravelly sand with some fines. Any material removed from below the slab with measurable fines was temporarily drummed on the Site, labeled, and will be sampled for characterization and appropriate disposal.

The void spaces below the slab were filled with ¾-inch or greater clean gravel (lacking fines). Vent pipes were placed through the slab so that the end rested on the gravel backfill. The gap between the core hole through the concrete slab and the vent pipe was sealed with hydraulic cement, in accordance with the design.

Vent pipes were constructed of 3-inch schedule 40 PVC. The pipe was field routed to the cupolas in as linear a manner as possible, and secured with wall brackets and ceiling hangers. A U-tube manometer was installed at eye level on each vent pipe for ease of access.

3.2.4 Modifications

The SSDS was constructed in accordance with Sections 5.3.1 to 5.3.4 of the IAWP, with the following modifications:

- VENT02 was shifted slightly southeast to a carpeted location due to the presence of potentially asbestos-containing floor tile in the planned installation location.
- VENT03 was shifted south to a location with a permeable sub-slab material due to the presence of fine-grained material (i.e., clay) beneath the building slab at the planned installation location. The adjustment of this location was greater than 10 feet from the planned location and was approved by Ecology and EPA on January 10, 2024 (Ecology 2024; EPA 2024).
- SB03 was shifted slightly north to an open area due to an unknown utility identified during the private utility locate and a conflict with the configuration of student desks and computers.

4 Post-Installation Compliance Monitoring

MFA conducted the first compliance monitoring event between February 14 and 16, 2024, after the SSDS had been operating for at least one week. Compliance monitoring is planned to occur quarterly during the first year of SSDS operation to evaluate the functionality of the system and establish baseline operating conditions. The first compliance monitoring event included indoor and ambient air sampling, air emissions sampling from vents,[1] sub-slab pressure measurements, and vent pressure monitoring. Work was conducted in accordance with the site-specific health and safety plan and

[1] Over the four quarters of compliance monitoring, air emissions sampling will be conducted twice: once during the wet season (initial event) and once during the dry season (i.e., August 2024).

sampling and analysis plan/quality assurance project plan (Appendixes A and B of the IAWP, respectively; MFA 2023). Field photographs from the event are provided in Appendix A.

4.1 Indoor and Ambient Air Sampling

On February 14, 2024, MFA collected three indoor air samples (INAIR01-021424 through INAIR03-021424) and one ambient air sample (OUTAIR02-021424). Air samples were collected using 6-liter stainless steel Summa canisters with 8-hour flow controllers and analyzed for cVOCs. Sample canisters were placed 3 to 5 feet above the ground to allow for sample collection within the breathing zone. Field data were recorded on field sampling data sheets, provided as Appendix B.

Indoor air samples were collected to:

- Confirm that the construction process did not result in preferential pathways for vapor intrusion into the former laundry building, and
- Confirm the effectiveness of the sub-slab depressurization system.

The outdoor air sample was positioned outside and upwind of the building to capture potential ambient volatile organic compound (VOC) sources for the 8-hour indoor air sample collection period. Field staff deployed the sampler in a location that was free of discernible ambient sources of VOCs. Atmospheric data (including wind speed and direction) from the nearest weather station was used to position the sample upwind of the building. Wind was forecasted to blow from the east on February 14, 2024; therefore, the ambient air sample was positioned east of the building (see Figure 1-2). The reported wind direction at the end of the day was from the northeast.

Analytical results are presented on Table 4-1, laboratory analytical reports are provided in Appendix C, and a data validation memorandum is presented in Appendix D.

Indoor and outdoor air sample results were screened to Model Toxics Control Act (MTCA) Method B cleanup levels for indoor air. No indoor or outdoor air results exceeded MTCA Method B cleanup levels. All cVOCs were non-detect, with the exception of 1,2-DCA.

Low concentrations of 1,2-DCA were detected in all three indoor air samples, with concentrations ranging from 0.069 to 0.073 micrograms per cubic meter (ug/m^3), as well as in the outdoor air sample at 0.057 ug/m^3. During the RI vapor sampling on April 6, 2021, similarly low concentrations of 1,2-DCA were detected in indoor and outdoor air (MFA 2022). 1,2-DCA was non-detect in all samples during RI vapor sampling on July 20, 2021. 1,2-DCA has not been detected in sub-slab soil gas samples collected within the building (MFA 2022). All concentrations of 1,2-DCA detected in indoor and outdoor air during both the 2021 RI sampling and the first post-installation compliance monitoring event were below the MTCA Method B cancer cleanup level (0.096 ug/m^3). Given the lack of sub-slab detections and low detections observed in both indoor and outdoor air or sub-slab soil gas, it is likely these detections are associated with an ambient source in the general surrounding area outside of the building.

4.2 Air Emissions Sampling from Vents

On February 16, 2024, MFA collected five air emissions samples (VENT01-021624 through VENT05-021624) from vent risers associated with the SSDS. Air samples were collected using 1-liter

stainless steel Summa canisters with 5-minute flow controllers and analyzed for cVOCs. Field data were recorded on field sampling data sheets, provided as Appendix B.

Analytical results are presented on Table 4-2, laboratory analytical reports are provided in Appendix C, and a data validation memorandum is presented in Appendix D.

MFA evaluated air emissions from the SSDS against the small quantity emission rates (SQERs) defined in WAC 173-460-150 (see calculations in Appendix E). The calculated result for PCE and TCE SQERs associated with the SSDS are three orders of magnitude lower than the respective SQER value. Therefore, concentrations of PCE and TCE vented via the SSDS do not exceed the SQER threshold. One additional air emission sampling event will be conducted in the dry season within the first year of SSDS operation to evaluate seasonal variations in the soil gas concentrations.

The Northwest Clean Air Agency regulates emissions in Skagit County; however, there is a procedural exemption for an air discharge permit for the Site as the operation of the SSDS is being conducted under an AO, in accordance with WAC 173-340-710(9)(b).

4.3 Sub-Slab Pressure Measurements

On February 16, 2024, MFA measured the differential pressure at the three permanent sub-slab vapor pin locations (SB01 through SB03) to assess whether a vacuum was being generated across the slab of the former laundry building.[2] The differential pressure was measured for approximately 10 minutes at each sub-slab vapor pin location until readings stabilized. The final differential pressure reading, date, time, and location were recorded on the SSDS inspection form (see Appendix F).

Under constant fan operation, the differential pressure between the sub-slab and the indoor air is dependent on several factors including temperature, weather, indoor climate control operating conditions, and open doors or windows. The presence of a pressure differential where the indoor air pressure is greater than sub-slab vapor is indicative that the system is functioning as intended.

The differential pressure measurements from SB01 and SB02 were above the vacuum (i.e., negative pressure) goal of 0.001 inches of water column. The differential pressure at location SB03 did not meet the pressure goal; differential pressure was measured at a positive 0.004 inches of water column.

SB01 and SB02 are pre-existing permanent sub-slab vapor pins installed in April 2021, whereas SB03 was installed on February 15, 2024, and allowed to equilibrate for 24-hours prior to the collection of differential pressure measurements. It is possible that the equilibration period was not long enough to allow for an accurate representation of pressure differential readings at SB03. Differential pressure measurements will be collected during the forthcoming compliance monitoring events to further inform the understanding of effective differential pressure between the sub-slab and the indoor air.

4.4 Vent Pressure Monitoring

On February 16, 2024, MFA observed the vacuum (pressure differential) from the U-tube manometers at each vent riser pipe (VENT01 through VENT05) to confirm that the fans were

[2] A third sub-slab vapor pin, SB03, was installed on February 15, 2024, as discussed below.

functioning and that each vent riser was properly sealed. The differential pressure reading, date, time, and location were recorded on the SSDS inspection form (see Appendix F).

Manometer vacuum (i.e., negative pressure) readings at the five vent locations ranged from 2.4 to 3.2 inches of water column, above the anticipated pressure goal of 0.5 and 1.75 inches of water column. The pressure readings indicate that the SSDS is pulling a sufficient vacuum at the vent locations.

5 Conclusions and Next Steps

Based on inspections during construction (Section 3) and the first round of system performance testing results (Section 4), it is our opinion that the interim remedial action has been constructed in substantial compliance with the plans, specifications and related documents.

Overall, differential pressure readings from the sub-slab vapor pins and U-tube manometers on the SSDS vents indicate that the system is operating as anticipated. While the differential pressure reading at sub-slab vapor pin location SB03 did not meet the pressure goal, MFA suspects that the new vapor pin was not fully equilibrated at the time of pressure measurement due to its recent installation.

All cVOCs were non-detect in indoor and outdoor air samples, with the exception of low detections of 1,2-DCA. Concentrations of 1,2-DCA were below the MTCA Method B cancer cleanup level for indoor air. The concentration of 1,2-DCA was similar between all three indoor sampling locations and the outdoor ambient sampling location. As discussed above, given the lack of 1,2-DCA sub-slab detections and low detections observed in both indoor and outdoor air or sub-slab soil gas, it is likely these detections are associated with an ambient source in the general surrounding area outside of the building.

The results of the first compliance monitoring indicate the system is functioning within the anticipated operating conditions. Quarterly compliance monitoring will be implemented for the first year of system operation. In accordance with the schedule provided in Section 4.2 of the IAWP, the next post-installation compliance monitoring events are scheduled as follows:

- May 2024
- August 2024
- November 2024

Following each compliance monitoring event, data will be provided to Ecology in quarterly progress reports or technical memorandums within 90 days of the completion of each event.

Following the completion of compliance monitoring and the establishment of regular operating conditions with Ecology, Port staff will begin quarterly performance monitoring, including SSDS inspections. Figure 5-1 depicts the steps for evaluating which samples are required based on the observations of the quarterly inspection. Performance monitoring is further described in Section 5.5 of the IAWP.

The remedial action described in this completion report is considered an interim remedial action at this time. A final remedial action for this AOC on the Site will be evaluated in the remedial investigation and feasibility study and documented in the forthcoming cleanup action plan.

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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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TRACT A

Hansen Creek

Maintenance Building

Former Laundry Building

Powerhouse

POWERHOUSE DRIVE

DIV. 8

DIV. 9

Athletic Field

DIV. 5

TRACT C

TURNING POINT COURT

PLANTERS ROAD

Smith Hall

DIV. 6

Trevennen Building

Thompson Hall

Wilkes Hall

Valdez Hall

DIV. 7

HUB DRIVE

NORTHERN STATE ROAD

Denny Building

NORTH SOUND DRIVE

DIV. 2

Former Ward Building Area

DIV. 4

Douglas Building

Coleman Building

Brickyard Creek

DIV. 3

THOMPSON DRIVE

TRACT C

CHARLES JONES MEMORIAL CIRCLE

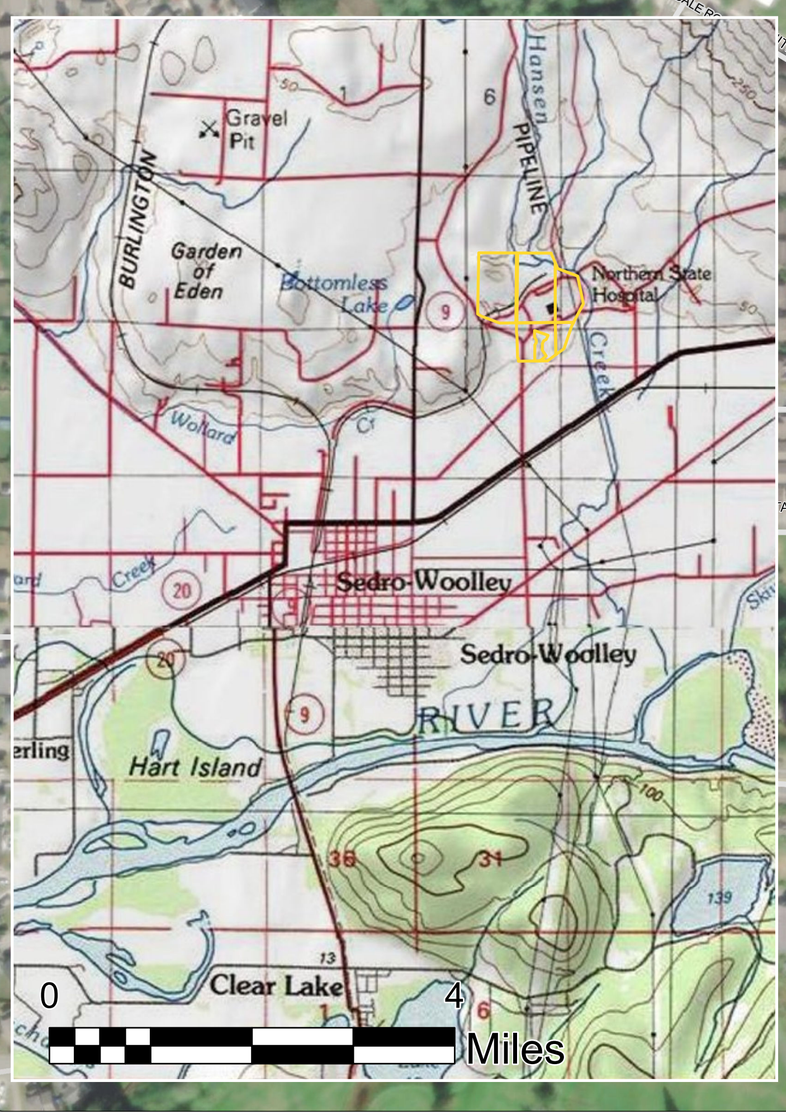
CHARLES JONES MEMORIAL CIRCLE

DIV. 1

FRUITDALE ROAD

TRACT B

STARFLOWER LANE



Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads and streams data sets obtained from Skagit County; city limits data set obtained from City of Sedro-Woolley.

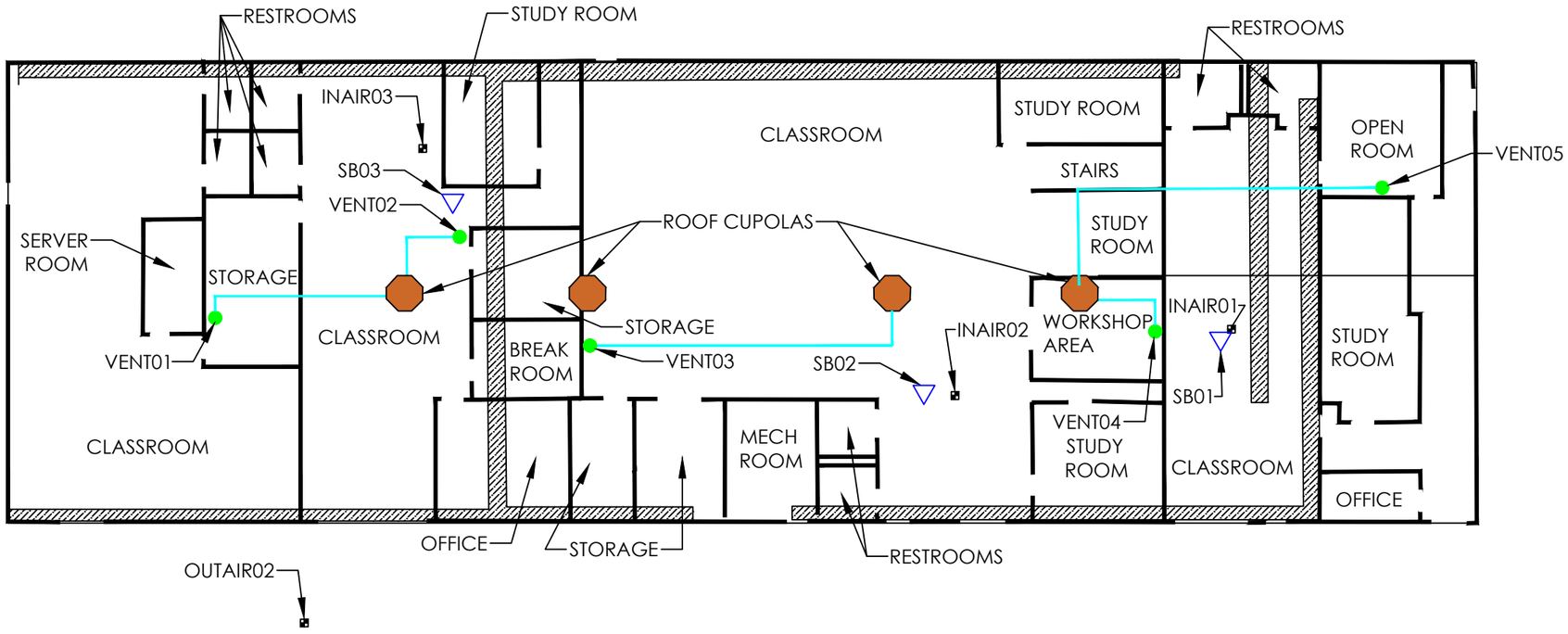
Legend

- Property Parcel and Parcel Name
- Northern State Recreational Area
- Sedro-Woolley City Limits (Post Annexation)
- Stream

Figure 1-1
Property Vicinity
Northern State Multi Service Center
Port of Skagit
Sedro-Woolley, Washington

0 500 1,000
Feet

Print Date: 6/7/2022
Approved By: cwise
Produced By: jroberts
Project: M0624.04.018



LEGEND:

- BUILDING FOOTPRINT
- VENT LOCATION/ FLOOR PENETRATION
- PIPE ROUTE
- INDOOR OR OUTDOOR AIR SAMPLE LOCATION
- SUB-SLAB VAPOR PIN
- PIPE TRENCH

NOTE:

1. INDOOR AND OUTDOOR AIR SAMPLE LOCATIONS AND PIPE TRENCH LOCATIONS ARE APPROXIMATE.

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ERIK T. BARKOM
STATE OF WASHINGTON
43788
REGISTERED
PROFESSIONAL ENGINEER

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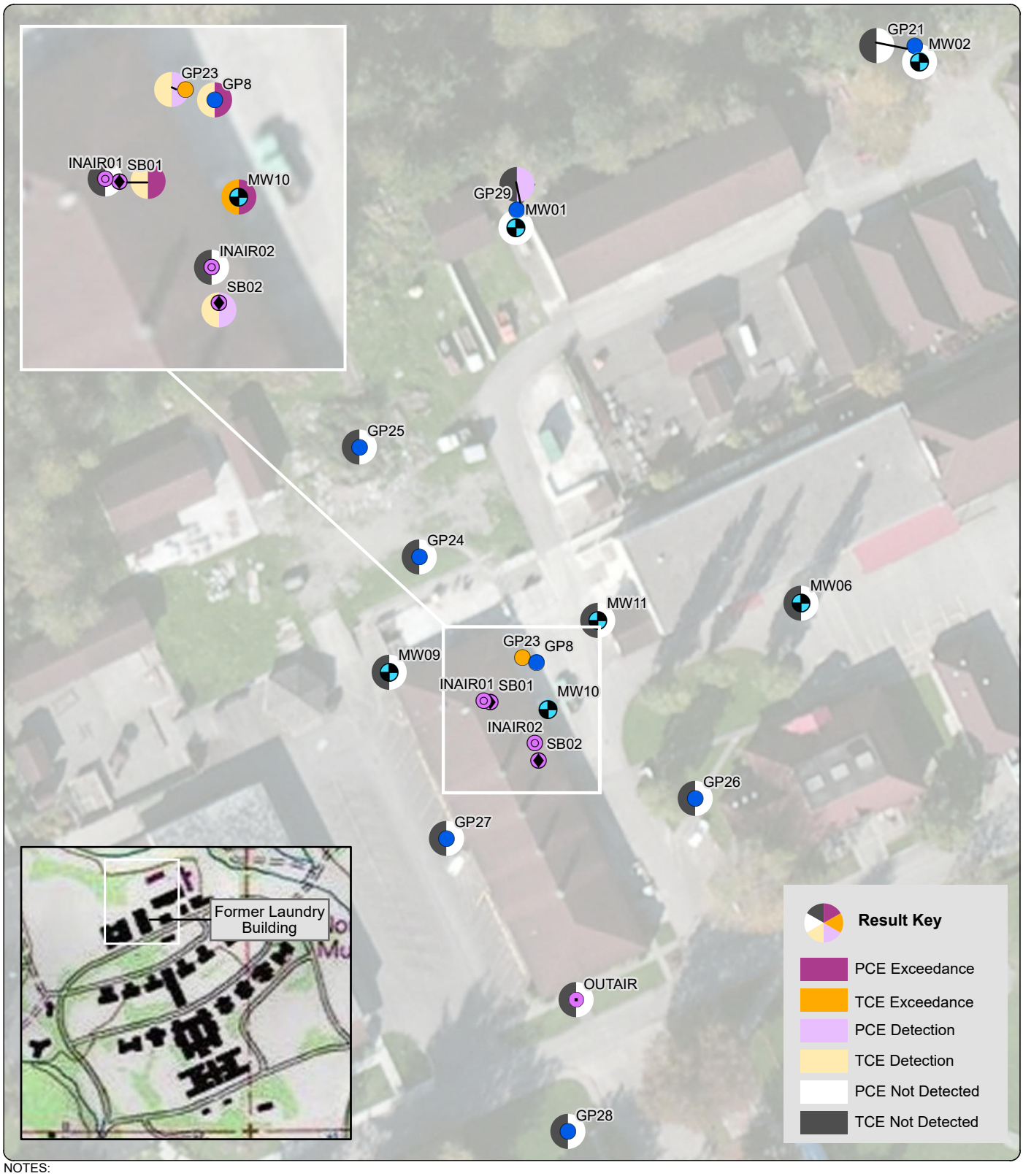
06-18-2024

DRAWING NOT TO SCALE

Figure 1-2
Sub-Slab Depressurization System As-Built

Northern State Multi Service Center
Sedro-Woolley, WA



NOTES:
All features are approximate.
MW01 and MW02 were not analyzed for TCE because adjacent borings were non-detect.
Results were screened against their applicable Model Toxics Control Act Cleanup Levels (see Table 3-3).
Analytical results shown on figure were collected prior to construction of the sub-slab depressurization system in 2023.
AOC = area of concern.
PCE = tetrachloroethene.
TCE = trichloroethene.

Legend

- Soil Boring
- Groundwater Boring
- Monitoring Well (Soil and Groundwater)
- Indoor Air
- Outdoor Air
- Subslab Vapor

Source:
Aerial photograph was obtained from ArcGIS Online.

Figure 2-1
AOC 1: Former Laundry Building Historical Results

Northern State Multi Service Center
Port of Skagit
Sedro-Woolley, Washington

0 60 120
Feet

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Path: X:\0624.04 Port of Skagit\22\Fig2-1_AOC1FormerLaundryBldgResults.mxd
Print Date: 5/7/2024
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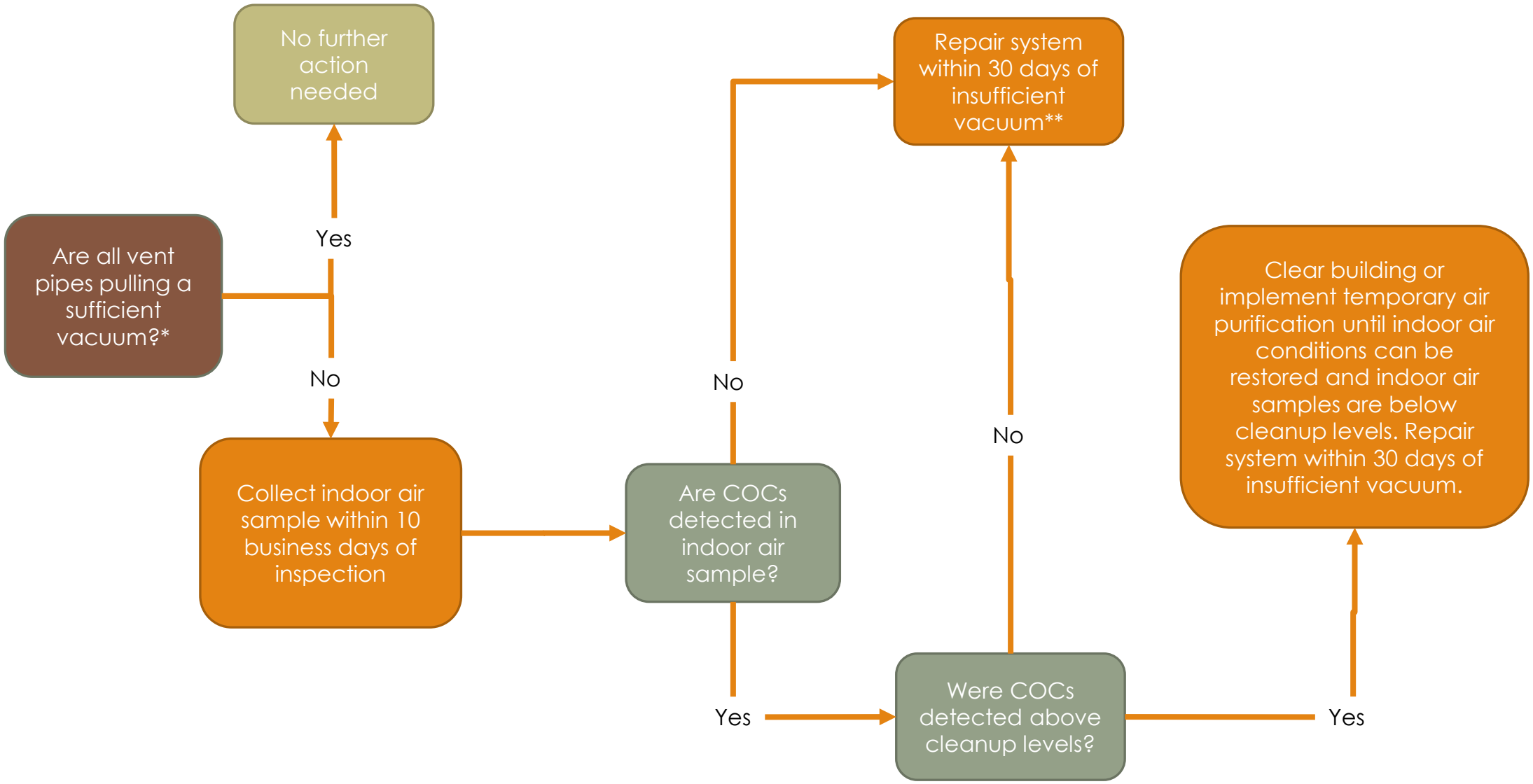
Produced By: jroberts
Project: M0624.04.018

Figure 5-1. Quarterly Inspection Indoor Air Sampling Decision Tree

Northern State Multi Service Center
Sedro-Woolley, WA



Note
*Sufficient vacuum values will be established following the establishment of standard operating conditions as approved by the engineer, Ecology, and EPA after the first compliance monitoring event.
**System repair may include replacing fan, resealing joints, or restoring power to a fan. If an initial repair does not restore the vacuum, facility shall work to identify issue and correct within the original 30-day timeframe.
COCs = chemicals of concern.

Tables

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Table 4-1
AOC 1: Indoor and Ambient (Outdoor) Air Analytical Results
Northern State Multi Service Center
Sedro-Woolley, Washington

Location:	MTCA Method B, Vapor Intrusion, Indoor Air[1]		INAIR01	INAIR02	INAIR03	OUTAIR02
Sample Name:			INAIR01-021424	INAIR02-021424	INAIR03-021424	OUTAIR02-021424
Collection Date:	Cancer	Noncancer	02/14/2024	02/14/2024	02/14/2024	02/14/2024
VOCs (ug/m^3)						
1,1,1-Trichloroethane	NV	2,300	0.55 U	0.55 U	0.55 U	0.55 U
1,1,2-Trichloroethane	0.16	0.091	0.055 U	0.055 U	0.055 U	0.055 U
1,1-Dichloroethane	1.6	NV	0.4 U	0.4 U	0.4 U	0.4 U
1,1-Dichloroethene	NV	91	0.4 U	0.4 U	0.4 U	0.4 U
1,2-Dichloroethane	0.096	3.2	0.073	0.069	0.073	0.057
Chloroethane	NV	4,600	2.6 U	2.6 U	2.6 U	2.6 U
cis-1,2-Dichloroethene	NV	18	0.4 U	0.4 U	0.4 U	0.4 U
Tetrachloroethene	9.6	18	6.8 U	6.8 U	6.8 U	6.8 U
trans-1,2-Dichloroethene	NV	18	0.4 U	0.4 U	0.4 U	0.4 U
Trichloroethene	0.33	0.91	0.11 U	0.11 U	0.11 U	0.11 U
Vinyl chloride	0.28	46	0.26 U	0.26 U	0.26 U	0.26 U

Notes

Detections were compared to screening criteria and no exceedances were identified; non-detects (U) were not compared with screening criteria.

AOC = area of concern.

MTCA = Model Toxics Control Act.

NV = no value.

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

ug/m^3 = micrograms per cubic meter.

VOC = volatile organic compound.

Reference

[1]Ecology. 2024. *Cleanup Levels and Risk Calculation (CLARC) table*. Washington State Department of Ecology, Toxics Cleanup Program. February.

Table 4-2
AOC 1: Vent Stack Air Analytical Results
Northern State Multi Service Center
Sedro-Woolley, Washington

Location:	VENT01	VENT02	VENT03	VENT04	VENT05
Sample Name:	VENT01-021624	VENT02-021624	VENT03-021624	VENT04-021624	VENT05-021624
Collection Date:	02/16/2024	02/16/2024	02/16/2024	02/16/2024	02/16/2024
VOCs (ug/m^3)					
1,1,1-Trichloroethane	0.34 UJ	1.8 UJ	0.24 UJ	0.21 UJ	0.35 UJ
1,1,2-Trichloroethane	0.37 UJ	1.9 UJ	0.26 UJ	0.23 UJ	0.37 UJ
1,1-Dichloroethane	0.20 UJ	0.98 UJ	0.14 UJ	0.12 UJ	0.20 UJ
1,1-Dichloroethene	0.35 UJ	1.8 UJ	0.25 UJ	0.22 UJ	0.36 UJ
1,2-Dichloroethane	0.20 UJ	0.98 UJ	0.14 UJ	0.12 UJ	0.20 UJ
Chloroethane	0.32 UJ	1.6 UJ	0.21 UJ	0.19 UJ	0.32 UJ
cis-1,2-Dichloroethene	0.16 UJ	0.84 UJ	0.12 UJ	0.10 UJ	0.17 UJ
Tetrachloroethene	7.5 J	7.5 UJ	8.8 J	27 J	4.9 J
trans-1,2-Dichloroethene	0.44 UJ	2.1 UJ	0.29 UJ	0.25 UJ	0.44 UJ
Trichloroethene	0.41 UJ	2.1 UJ	0.29 UJ	0.25 UJ	0.41 UJ
Vinyl chloride	0.091 UJ	0.46 UJ	0.064 UJ	0.056 UJ	0.092 UJ

Notes

AOC = area of concern.

J = result is estimated.

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

ug/m^3 = micrograms per cubic meter.

VOC = volatile organic compound.

Appendix A

Field Photographs

MAUL FOSTER ALONGI

Photographs

Project Name: Northern State Multi Service Center—AOC 1 Interim Action Completion Report
Project Number: M0624.04.022
Location: Sedro-Woolley, Washington

Photo No. 1.

Description

Roof cupolas on the east side of the former laundry building, looking northwest. Piping associated with the sub-slab depressurization system is connected to roof cupolas for ventilation to ambient air.

Photo No. 2.

Description

Drilling through the slab and ceiling drywall for vent installation in the workshop area (location VENT04).

Photographs

Project Name: Northern State Multi Service Center—AOC 1 Interim Action Completion Report
Project Number: M0624.04.022
Location: Sedro-Woolley, Washington

Photo No. 3.

Description

Material removed from beneath the concrete slab.

Photo No. 4.

Description

Material used to backfill the hole beneath the slab.

Photographs

Project Name: Northern State Multi Service Center—AOC 1 Interim Action Completion Report
Project Number: M0624.04.022
Location: Sedro-Woolley, Washington

Photo No. 5.

Description

Installed vent in the open room in the north portion of the building (location VENT05).

Photo No. 6.

Description

U-tube manometer and sample port installed at location VENT05.

Photographs

Project Name: Northern State Multi Service Center—AOC 1 Interim Action Completion Report
Project Number: M0624.04.022
Location: Sedro-Woolley, Washington

Photo No. 7.

Description

Fan connected to vent at location VENT05.

Photo No. 8.

Description

Fantech Rn1 fans used in the sub-slab depressurization system.

Photographs

Project Name: Northern State Multi Service Center—AOC 1 Interim Action Completion Report
Project Number: M0624.04.022
Location: Sedro-Woolley, Washington

Photo No. 9.

Description

Outdoor air sample OUTAIR02 on the east side of the building, collected on February 14, 2024.

Photo No. 10.

Description

Indoor air sample INAIR02 in the central portion of the building, collected on February 14, 2024.

Photographs

Project Name: Northern State Multi Service Center—AOC 1 Interim Action Completion Report
Project Number: M0624.04.022
Location: Sedro-Woolley, Washington

Photo No. 11.

Description

Unknown utility identified during private utility locate near proposed sub-slab vapor pin location SB03.

Photo No. 12.

Description

Vent sampling at VENT05 on February 16, 2024.

Appendix B

Field Sampling Data Sheets

MAUL FOSTER ALONGI

Sampler(s): A. Bixby, B. Murphy

Vapor Field Sampling Data Sheet
Project: Northern State Multi Service Center
Location: 2070 Northern State Road, Sedro-Woolley, Washington

Sample ID	Sample Type	Date	Summa Canister ID	Manifold ID	Canister Size (L)	Collection Duration	Sample			
							Begin Time	End Time	Initial Pressure ("Hg)[a]	Final Pressure ("Hg)
INAIR01-021424	Indoor Air	2/14/2024	20549	5352	6	8 hour	7:41	15:41	-30	-7.5
INAIR02-021424	Indoor Air	2/14/2024	28229	6603	6	8 hour	7:35	15:35	-30	-10
INAIR03-021424	Indoor Air	2/14/2024	18571	6607	6	8 hour	7:51	15:51	-30	-8
OUTAIR02-021424	Ambient Air	2/14/2024	20550	5349	6	8 hour	6:58	14:58	-29	-8
VENT01-021624	Vent Stack	2/16/2024	4180	224	1	5 minutes	9:59	10:05	-30+	-8
VENT02-021624	Vent Stack	2/16/2024	4181	203	1	5 minutes	8:05	8:11	-30+	-5
VENT03-021624	Vent Stack	2/16/2024	4178	221	1	5 minutes	9:09	9:15	-30+	-5
VENT04-021624	Vent Stack	2/16/2024	4177	231	1	5 minutes	8:46	8:51	-30+	-5
VENT05-021624	Vent Stack	2/16/2024	4185	220	1	5 minutes	9:41	9:46	-30+	-5

Notes

"Hg = inches of mercury.

ID = identification.

L = liter.

ppm = parts per million.

[a]-30+ indicates that the vacuum gauge was above the maximum pressure value of 30"Hg.

Appendix C

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 Ave South
Seattle, WA 98108-2419
(206) 285-8282
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February 26, 2024

Carolyn Wise, Project Manager
Maul Foster Alongi
1329 N State St, Suite 301
Bellingham, WA 98225

Dear Ms Wise:

Included are the results from the testing of material submitted on February 16, 2024 from the Former Northern State Hospital M0624.04.022, F&BI 402242 project. There are 8 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
MFA0226R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 16, 2024 by Friedman & Bruya, Inc. from the Maul Foster Alongi Former Northern State Hospital M0624.04.022, F&BI 402242 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
402242 -01	INAIR01-021424
402242 -02	INAIR02-021424
402242 -03	INAIR03-021424
402242 -04	OUTAIR02-021424

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INAIR01-021424	Client:	Maul Foster Alongi
Date Received:	02/16/24	Project:	M0624.04.022, F&BI 402242
Date Collected:	02/14/24	Lab ID:	402242-01
Date Analyzed:	02/22/24	Data File:	022125.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
Vinyl chloride	<0.26	<0.1
Chloroethane	<2.6	<1
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	0.073	0.018
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INAIR02-021424	Client:	Maul Foster Alongi
Date Received:	02/16/24	Project:	M0624.04.022, F&BI 402242
Date Collected:	02/14/24	Lab ID:	402242-02
Date Analyzed:	02/22/24	Data File:	022124.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
Vinyl chloride	<0.26	<0.1
Chloroethane	<2.6	<1
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	0.069	0.017
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INAIR03-021424	Client:	Maul Foster Alongi
Date Received:	02/16/24	Project:	M0624.04.022, F&BI 402242
Date Collected:	02/14/24	Lab ID:	402242-03
Date Analyzed:	02/22/24	Data File:	022123.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	ppbv
Vinyl chloride	<0.26	<0.1
Chloroethane	<2.6	<1
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	0.073	0.018
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	OUTAIR02-021424	Client:	Maul Foster Alongi
Date Received:	02/16/24	Project:	M0624.04.022, F&BI 402242
Date Collected:	02/14/24	Lab ID:	402242-04
Date Analyzed:	02/22/24	Data File:	022122.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	ppbv
Vinyl chloride	<0.26	<0.1
Chloroethane	<2.6	<1
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	0.057	0.014
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	M0624.04.022, F&BI 402242
Date Collected:	Not Applicable	Lab ID:	04-0450 MB
Date Analyzed:	02/21/24	Data File:	022113.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	ppbv
Vinyl chloride	<0.26	<0.1
Chloroethane	<2.6	<1
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

Date of Report: 02/26/24
Date Received: 02/16/24
Project: Former Northern State Hospital M0624.04.022, F&BI 402242

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

Laboratory Code: 402290-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Vinyl chloride	ug/m3	<0.26	<0.26	nm
Chloroethane	ug/m3	<2.6	<2.6	nm
1,1-Dichloroethene	ug/m3	<0.4	<0.4	nm
trans-1,2-Dichloroethene	ug/m3	<0.4	<0.4	nm
1,1-Dichloroethane	ug/m3	<0.4	<0.4	nm
cis-1,2-Dichloroethene	ug/m3	<0.4	<0.4	nm
1,2-Dichloroethane (EDC)	ug/m3	0.16	0.15	6
1,1,1-Trichloroethane	ug/m3	<0.55	<0.55	nm
Trichloroethene	ug/m3	<0.11	<0.11	nm
1,1,2-Trichloroethane	ug/m3	<0.055	<0.055	nm
Tetrachloroethene	ug/m3	<6.8	<6.8	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Vinyl chloride	ug/m3	35	107	70-130
Chloroethane	ug/m3	36	109	70-130
1,1-Dichloroethene	ug/m3	54	104	70-130
trans-1,2-Dichloroethene	ug/m3	54	98	70-130
1,1-Dichloroethane	ug/m3	55	105	70-130
cis-1,2-Dichloroethene	ug/m3	54	96	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	106	70-130
1,1,1-Trichloroethane	ug/m3	74	110	70-130
Trichloroethene	ug/m3	73	116	70-130
1,1,2-Trichloroethane	ug/m3	74	125	70-130
Tetrachloroethene	ug/m3	92	122	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.

402242

SAMPLE CHAIN OF CUSTODY

02/16/24

Page # 1 of 1

Report To Carolyn Wise
Company Maul Foster & Alongi, Inc.
Address 1329 N State St, Ste 301
City, State, ZIP Bellingham, WA 98225
Phone (360) 690-5982 Email cwise@maulfoster.com

SAMPLERS (signature): Amanda Bixby

PROJECT NAME & ADDRESS: Former Northern State Hospital

PO # MOG 24.04.022

NOTES:

INVOICE TO accounting@maulfoster.com

TURNAROUND TIME
- X Standard
- RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- X 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		Notes
INAIR01-021424	01	20549	05352	(IA) / SG	2/14/24	-30	0741	-7.5	1541			X				
INAIR02-021424	02	23229	06603	(IA) / SG	2/14/24	-30	0735	-10	1535			X				
INAIR03-021424	03	18571	06607	(IA) / SG	2/14/24	-30	0751	-8	1551			X				
OUTAIR02-021424	04	20550	05349	(IA) / SG	2/14/24	-29	0658	-8	1458			X				
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

Samples received at 19 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Amanda Bixby	Amanda Bixby	MFA	2/15/24	1200
Received by: Nhan Phan	Nhan Phan	FCBT	2/16/24	1430
Relinquished by:				
Received by:				

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

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 Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

March 12, 2024

Carolyn Wise, Project Manager
Maul Foster Alongi
1329 N State St, Suite 301
Bellingham, WA 98225

Dear Ms Wise:

Included is the amended report from the testing of material submitted on February 20, 2024 from the Former Northern State Hospital M0624.04.022, F&BI 402275 project. The results were reported to the method detection limit.

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: Fiona Bellows
MFA0229R.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.

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Seattle, WA 98108-2419
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www.friedmanandbruya.com

February 29, 2024

Carolyn Wise, Project Manager
Maul Foster Alongi
1329 N State St, Suite 301
Bellingham, WA 98225

Dear Ms Wise:

Included are the results from the testing of material submitted on February 20, 2024 from the Former Northern State Hospital M0624.04.022, F&BI 402275 project. There are 9 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
MFA0229R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 20, 2024 by Friedman & Bruya, Inc. from the Maul Foster Alongi Former Northern State Hospital M0624.04.022, F&BI 402275 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
402275 -01	VENT01-021624
402275 -02	VENT02-021624
402275 -03	VENT03-021624
402275 -04	VENT04-021624
402275 -05	VENT05-021624

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VENT01-021624	Client:	Maul Foster Alongi
Date Received:	02/20/24	Project:	M0624.04.022, F&BI 402275
Date Collected:	02/16/24	Lab ID:	402275-01 1/7.8
Date Analyzed:	02/23/24	Data File:	022222.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	103	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<0.091 j	<0.036 j
Chloroethane	<0.32 j	<0.12 j
1,1-Dichloroethene	<0.35 j	<0.088 j
trans-1,2-Dichloroethene	<0.44 j	<0.11 j
1,1-Dichloroethane	<0.20 j	<0.047 j
cis-1,2-Dichloroethene	<0.16 j	<0.040 j
1,2-Dichloroethane (EDC)	<0.20 j	<0.047 j
1,1,1-Trichloroethane	<0.34 j	<0.061 j
Trichloroethene	<0.41 j	<0.075 j
1,1,2-Trichloroethane	<0.37 j	<0.067 j
Tetrachloroethene	7.5 j	1.1 j

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VENT02-021624	Client:	Maul Foster Alongi
Date Received:	02/20/24	Project:	M0624.04.022, F&BI 402275
Date Collected:	02/16/24	Lab ID:	402275-02 1/40
Date Analyzed:	02/23/24	Data File:	022223.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	103	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<0.46 j	<0.18 j
Chloroethane	<1.6 j	<0.58 j
1,1-Dichloroethene	<1.8 j	<0.45 j
trans-1,2-Dichloroethene	<2.1 j	<0.52 j
1,1-Dichloroethane	<0.98 j	<0.24 j
cis-1,2-Dichloroethene	<0.84 j	<0.21 j
1,2-Dichloroethane (EDC)	<0.98 j	<0.24 j
1,1,1-Trichloroethane	<1.8 j	<0.32 j
Trichloroethene	<2.1 j	<0.38 j
1,1,2-Trichloroethane	<1.9 j	<0.34 j
Tetrachloroethene	<7.5 j	<1.1 j

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VENT03-021624	Client:	Maul Foster Alongi
Date Received:	02/20/24	Project:	M0624.04.022, F&BI 402275
Date Collected:	02/16/24	Lab ID:	402275-03 1/5.5
Date Analyzed:	02/23/24	Data File:	022221.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	ppbv
Vinyl chloride	<0.064 j	<0.025 j
Chloroethane	<0.21 j	<0.079 j
1,1-Dichloroethene	<0.25 j	<0.062 j
trans-1,2-Dichloroethene	<0.29 j	<0.072 j
1,1-Dichloroethane	<0.14 j	<0.033 j
cis-1,2-Dichloroethene	<0.12 j	<0.029 j
1,2-Dichloroethane (EDC)	<0.14 j	<0.033 j
1,1,1-Trichloroethane	<0.24 j	<0.043 j
Trichloroethene	<0.29 j	<0.053 j
1,1,2-Trichloroethane	<0.26 j	<0.047 j
Tetrachloroethene	8.8 j	1.3 j

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VENT04-021624	Client:	Maul Foster Alongi
Date Received:	02/20/24	Project:	M0624.04.022, F&BI 402275
Date Collected:	02/16/24	Lab ID:	402275-04 1/4.8
Date Analyzed:	02/23/24	Data File:	022219.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	ppbv
Vinyl chloride	<0.056 j	<0.022 j
Chloroethane	<0.19 j	<0.069 j
1,1-Dichloroethene	<0.22 j	<0.054 j
trans-1,2-Dichloroethene	<0.25 j	<0.063 j
1,1-Dichloroethane	<0.12 j	<0.029 j
cis-1,2-Dichloroethene	<0.10 j	<0.025 j
1,2-Dichloroethane (EDC)	<0.12 j	<0.029 j
1,1,1-Trichloroethane	<0.21 j	<0.038 j
Trichloroethene	<0.25 j	<0.046 j
1,1,2-Trichloroethane	<0.23 j	<0.041 j
Tetrachloroethene	27 j	4.0 j

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VENT05-021624	Client:	Maul Foster Alongi
Date Received:	02/20/24	Project:	M0624.04.022, F&BI 402275
Date Collected:	02/16/24	Lab ID:	402275-05 1/8.0
Date Analyzed:	02/23/24	Data File:	022220.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	ppbv
Vinyl chloride	<0.092 j	<0.036 j
Chloroethane	<0.32 j	<0.12 j
1,1-Dichloroethene	<0.36 j	<0.090 j
trans-1,2-Dichloroethene	<0.44 j	<0.11 j
1,1-Dichloroethane	<0.20 j	<0.048 j
cis-1,2-Dichloroethene	<0.17 j	<0.041 j
1,2-Dichloroethane (EDC)	<0.20 j	<0.048 j
1,1,1-Trichloroethane	<0.35 j	<0.063 j
Trichloroethene	<0.41 j	<0.076 j
1,1,2-Trichloroethane	<0.37 j	<0.068 j
Tetrachloroethene	4.9 j	0.72 j

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	M0624.04.022, F&BI 402275
Date Collected:	Not Applicable	Lab ID:	04-0455 MB
Date Analyzed:	02/22/24	Data File:	022212.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	ppbv
Vinyl chloride	<0.012 j	<0.0045 j
Chloroethane	<0.037 j	<0.015 j
1,1-Dichloroethene	<0.029 j	<0.012 j
trans-1,2-Dichloroethene	<0.033 j	<0.013 j
1,1-Dichloroethane	<0.016 j	<0.0060 j
cis-1,2-Dichloroethene	<0.013 j	<0.0051 j
1,2-Dichloroethane (EDC)	<0.016 j	<0.0060 j
1,1,1-Trichloroethane	<0.020 j	<0.0078 j
Trichloroethene	<0.025 j	<0.0095 j
1,1,2-Trichloroethane	<0.022 j	<0.0085 j
Tetrachloroethene	<0.069 j	<0.027 j

Date of Report: 02/29/24
Date Received: 02/20/24
Project: Former Northern State Hospital M0624.04.022, F&BI 402275

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

Laboratory Code: 402237-01 1/4.9 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Vinyl chloride	ug/m3	<1.3	<1.3	nm
Chloroethane	ug/m3	<13	<13	nm
1,1-Dichloroethene	ug/m3	<1.9	<1.9	nm
trans-1,2-Dichloroethene	ug/m3	<1.9	<1.9	nm
1,1-Dichloroethane	ug/m3	<2	<2	nm
cis-1,2-Dichloroethene	ug/m3	<1.9	<1.9	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.2	<0.2	nm
1,1,1-Trichloroethane	ug/m3	<2.7	<2.7	nm
Trichloroethene	ug/m3	<0.53	<0.53	nm
1,1,2-Trichloroethane	ug/m3	<0.27	<0.27	nm
Tetrachloroethene	ug/m3	110	110	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Vinyl chloride	ug/m3	35	106	70-130
Chloroethane	ug/m3	36	108	70-130
1,1-Dichloroethene	ug/m3	54	108	70-130
trans-1,2-Dichloroethene	ug/m3	54	100	70-130
1,1-Dichloroethane	ug/m3	55	106	70-130
cis-1,2-Dichloroethene	ug/m3	54	98	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	107	70-130
1,1,1-Trichloroethane	ug/m3	74	111	70-130
Trichloroethene	ug/m3	73	116	70-130
1,1,2-Trichloroethane	ug/m3	74	124	70-130
Tetrachloroethene	ug/m3	92	123	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.

SAMPLE CHAIN OF CUSTODY

02/20/24

402275

Report To Carolyn Wise

Company Maul Foster & Alongi, Inc

Address 1329 N State St, Ste 301

City, State, ZIP Bellingham, WA 98225

Phone (360)690-5982 Email cwise@maulfoster.com

SAMPLERS (*signature*): Amanda Bixby

PROJECT NAME & ADDRESS: Former Northern State Hospital

PO #: M0624.04.022

NOTES:

INVOICE TO: accounting@maulfoster.com

TURNAROUND TIME
- X Standard
- RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- X 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		Notes
VENT01-021624	01	4180	224	IA / (SG)	2/16/24	-30+	0959	-5	1005			X				
VENT02-021624	02	4181	203	IA / (SG)	2/16/24	-30+	0805	-5	0811			X				
VENT03-021624	03	4178	221	IA / (SG)	2/16/24	-30	0909	-5	0915			X				
VENT04-021624	04	4177	231	IA / (SG)	2/16/24	-30+	0846	-5	0851			X				
VENT05-021624	05	4185	220	IA / (SG)	2/16/24	-30+	0941	-5	0946			X				
				IA / SG												
				IA / SG							Samples received at 18 °C					
				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: Amanda Bixby	Amanda Bixby	MFA	2/19/24	0800
Received by:	ANH PHAN	FSB	02/20/24	15:26
Relinquished by:				
Received by:				

Appendix D

Data Validation Memorandum

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ALONGI

Data Quality Assurance/Quality Control Review

Project No. M0624.04.022 | March 11, 2024 | Port of Skagit

Maul Foster & Alongi, Inc. (MFA), conducted an independent Stage 2A review of the quality of analytical results for indoor air, outdoor air, and vent stack air samples collected on February 14 and 16, 2024, at the Northern State Multi Service Center site in Sedro-Woolley, Washington.

Friedman & Bruya, Inc. (F&B), performed the analyses. MFA reviewed F&B report numbers 402242 and 402275. The analysis performed and the samples analyzed are listed in the following tables.

Analysis	Reference
Volatile organic compounds	EPA TO-15

Notes
EPA = U.S. Environmental Protection Agency.
TO = toxic organics.

Samples Analyzed	
Report 402242	**Report 402275**
INAIR01-021424	VENT01-021624
INAIR02-021424	VENT02-021624
INAIR03-021424	VENT03-021624
OUTAIR02-021424	VENT04-021624
--	VENT05-021624

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).

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 method detection limit (MDL).

Sample Conditions

Sample Custody

Sample custody was appropriately documented on the chain-of-custody forms accompanying the report. The reviewer confirmed that the gaps in custody are due to shipment via a third-party shipping service.

Holding Times

Extractions and analyses were performed within the recommended holding times.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

Reporting Limits

The laboratory evaluated results to MRLs in report 402242, and to MDLs in report 402275. Samples that required dilutions because of high analyte concentrations, matrix interferences, and/or dilutions necessary for preparation and/or analysis were reported with raised MDLs and MRLs.

The laboratory qualified results between the MDL and the MRL with J, as estimated. In report 402275, F&B flagged all MDLs as estimated due to being reported below the standard MRLs. The reviewer accepted the laboratory qualification and final qualification for these results is UJ.

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.

All 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 did not report LCSD results; laboratory precision was evaluated using laboratory duplicate results. The LCS were prepared and analyzed at the required frequency.

All 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.

Laboratory duplicate results greater than five times the MRL were evaluated using laboratory relative percent difference 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.

All laboratory duplicate results met the acceptance criteria.

Matrix Spike and Matrix Spike Duplicate Results

Matrix spike (MS) and matrix spike duplicate (MSD) results are used to evaluate laboratory precision, accuracy, and the effect of the sample matrix on sample preparation and analysis. F&B did not report MS or MSD results, in accordance with the method.

Surrogate Recovery Results

The samples were spiked with surrogate compounds to evaluate laboratory performance for 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. No field duplicates were submitted for analysis.

Data Package

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

At MFA's request, F&B revised report 402275 on March 12, 2024, to report EPA Method TO-15 results to MDLs.

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.

F&B. 2022. *Quality Assurance Manual.* Rev. 18. Friedman & Bruya, Inc.: Seattle, WA. December 9.

Appendix E

Air Emissions Calculations

MAUL FOSTER ALONGI

Table E-1
Emissions Calculations - PCE
Northern State Multi Service Center
Sedro-Woolley, WA

WAC 173-460-150 Emissions Calculations	**Sampling Date: 2/16/24**		**Reference Notes:**
Compound	SQER		
Perchloroethylene (PCE)	**27**	**lbs/Year**	
CAS: 127-18-4			
Average measured vent stack PCE concentration in north half of AOC 1	16	ug/m^3	
	1.0E-09	lb/ft^3	(a)
Average measured vent stack PCE concentration in south half of AOC 1	6.7	ug/m^3	
	4.2E-10	lb/ft^3	(a)
Estimated Maximum Fan rate	270	ft^3/min	(1)
Discharge per year	1.4E+08	ft^3/year/fan	(b)
Discharge mass (PCE) per year in north half of AOC 1	1.4E-01	lb/year/fan	(c)
Discharge mass (PCE) per year in south half of AOC 1	5.9E-02	lb/year/fan	(c)
Number of discharge points in north half of AOC 1	2	fans	(3)
Number of discharge points in south half of AOC 1	3	fans	(3)
System discharge in north half of AOC 1	2.8E-01	lb/year	(d)
System discharge in south half of AOC 1	1.8E-01	lb/year	(d)
Total system discharge per year	**4.6E-01**	**lb/year**	(d)
	SQER Value =	27 lbs/year	

Notes

For non-detect results, half the detection limit was used to calculate the average concentration.

ft^3 = cubic feet.

g = gram.

lb = pound.

m^3 = cubic meter.

SQER = the small quantity emission rate.

ug = micrograms.

(a) $lb/ft^3 = (ug/m^3) \times (g/10^6\ ug) \times (1\ lbs/453.6\ g) \times (1\ m^3/35.31\ ft^3)$

(b) $ft^3/year = (ft^3/min) \times (60\ min/hr) \times (24\ hr/1\ day) \times (365\ day/year)$

(c) $lb/year = (ft^3/year) \times (lb/ft^3)$

(d) total lb/year = (lb/year/fan) x (# of fans)

References

(1) MFA. 2023. *AOC 1 Interim Action Work Plan, Sedro-Woolley, Washington* . Prepared for the Port of Skagit. Maul Foster & Alongi, Inc. Bellingham, Washington. August 24.

(2) There are 3 vent pipes with fans in the south half of the building.

(3) There are 2 vent pipes with fans in the north half the building.

Table E-2
Emissions Calculations - TCE
Northern State Multi Service Center
Sedro-Woolley, WA

WAC 173-460-150 Emissions Calculations	**Sampling Date: 2/16/24**		**Reference Notes:**
Compound	SQER		
Trichloroethylene (TCE)	**34 lbs/Year**		
CAS: 79-01-6			
Average measured vent stack TCE concentration in north half of AOC 1	0.17	ug/m^3	
	1.0E-11	lb/ft^3	(a)
Average measured vent stack TCE concentration in south half of AOC 1	0.47	ug/m^3	
	2.9E-11	lb/ft^3	(a)
Estimated Maximum Fan rate	270	ft^3/min	(1)
Discharge per year	1.4E+08	ft^3/year/fan	(b)
Discharge mass (TCE) per year in north half of AOC 1	1.5E-03	lb/year/fan	(c)
Discharge mass (TCE) per year in south half of AOC 1	4.1E-03	lb/year/fan	(c)
Number of discharge points in north half of AOC 1	2	fans	(3)
Number of discharge points in south half of AOC 1	3	fans	(3)
System discharge in north half of AOC 1	2.9E-03	lb/year	(d)
System discharge in south half of AOC 1	1.2E-02	lb/year	(d)
Total system discharge per year	**1.5E-02**	**lb/year**	(d)

SQER Value = 34 lbs/year

Notes

For non-detect results, half the detection limit was used to calculate the average concentration.

ft^3 = cubic feet.

g = gram.

lb = pound.

m^3 = cubic meter.

SQER = the small quantity emission rate.

ug = micrograms.

(a) $lb/ft^3 = (ug/m^3) \times (g/10^6\ ug) \times (1\ lbs/453.6\ g) \times (1\ m^3/35.31\ ft^3)$

(b) $ft^3/year = (ft^3/min) \times (60\ min/hr) \times (24\ hr/1\ day) \times (365\ day/year)$

(c) $lb/year = (ft^3/year) \times (lb/ft^3)$

(d) total lb/year = (lb/year/fan) x (# of fans)

References

(1) MFA. 2023. *AOC 1 Interim Action Work Plan, Sedro-Woolley, Washington* . Prepared for the Port of Skagit. Maul Foster & Alongi, Inc. Bellingham, Washington. August 24.

(2) There are 3 vent pipes with fans in the south half of the building.

(3) There are 2 vent pipes with fans in the north half the building.

Appendix F

Sub-slab Depressurization Inspection Form

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Quarterly Sub-slab Depressurization System (SSDS) Inspection
SWIFT Center—AOC 1 Interim Action
Port of Skagit
M0624.04.022

Name: A. Bixby, B. Murphy Date: 2/16/24 Outdoor temp.: 32° F

1. Power Supply

1.1 Is the power switch in "On" Position upon arrival? ☒ Yes ☐ No

1.2 If No, explain why power was off (if known) and steps taken to correct: N/A

2. Manometer Gauge Reading

Table 2.1 Manometer Gauge Readings

(Make sure lower side of manometer gauge is at 0)

Location	Time	Manometer Condition Good?	Pressure (" WC)	Pressure Goal (" WC)	Measurement Above Goal?
VENT01	0955	☒ Yes ☐ No	2.9	0.5 – 1.75	☒ Yes ☐ No
VENT02	0800	☒ Yes ☐ No	3.2	0.5 – 1.75	☒ Yes ☐ No
VENT03	0907	☒ Yes ☐ No	2.7	0.5 – 1.75	☒ Yes ☐ No
VENT04	0845	☒ Yes ☐ No	2.5	0.5 – 1.75	☒ Yes ☐ No
VENT05	0944	☒ Yes ☐ No	2.4	0.5 – 1.75	☒ Yes ☐ No

Notes:

If **No** is selected and blower operational, notify PM to identify corrective actions.

" WC = inches of water column.

3. Additional System Documentation

Table 3.1 System Checklist

Is the SSDS operating upon arrival?	☒ Yes ☐ No
Is the SSDS visually intact and undamaged?	☒ Yes ☐ No
Conduct a visual inspection of accessible system piping and pipe seals, connections, etc. Are the components free of any cracks, gaps, or changes?	☒ Yes ☐ No
Is the floor in generally good condition, with no cracks or penetrations observed?	☒ Yes ☐ No
Is the caulking on floor penetrations in good condition?	☐ Yes ☐ No N/A, not caulked

If the answer was **No** to any of the above, describe below and document corrective actions. Please describe any issues with the SSDS, if applicable:

4. Structural Changes

Table 4.1 System Checklist

Have there been any significant changes to the building's HVAC system?	☐ Yes ☒ No
Are any new buildings present near the subject structure that have emissions that could impact indoor air?	☐ Yes ☒ No
Has the building changed in use since last inspection?	☐ Yes ☒ No
Has the building undergone any physical modifications (additions, wall changes, new drains, etc.)	☐ Yes ☒ No

If the answer was **Yes** to any of the above, describe the changes below and photo document them:

5. Differential Pressure Readings

Existing sub-slab vapor pins are located on the floor of the building as shown on Figure 5-1 of Interim Action Work Plan.

Table 5.1 Final Differential Pressure Readings

Location	Time	Cap and Seal Secure Before Readings?	Final Pressure (" WC)	Pressure Goal (" WC)	Pressure Above Goal?	Weather	
						Wind Velocity/ Direction	Barometric Pressure (" Hg)
SB01	0940	☑ Yes ☐ No	-0.021	-0.001	☒ Yes ☐ No	5 mph / W	30.29
SB02	0846	☒ Yes ☐ No	-0.079	-0.001	☒ Yes ☐ No	4 mph / WSW	30.15
SB03	0746	☒ Yes ☐ No	0.004	-0.001	☐ Yes ☒ No	4 mph / WSW	30.11

Notes:

Measurements will be taken manually at each monitoring port using micromanometer with capability to measure as low as 0.001 " of WC).

" Hg = inches of mercury.

" WC = inches of water column.

Were all sub-slab vapor pins sealed/capped after differential pressure readings were measured?

☒ Yes ☐ No