VIA ELECTRONIC MAIL

August 6, 2025

Karen A. Cahill
Division of Environmental Remediation
New York State Department of Environmental Conservation
Region 7
5786 Widewaters Parkway
Syracuse, NY 13214-1867

Subject: **Operable Unit 2 (OU-2) Vapor Intrusion Assessment Work Plan for Buildings 5, 6, and 6A**
Former Emerson Power Transmission Facility, Ithaca, New York (NYSDEC Site No. 755010)

Dear Ms. Cahill:

WSP USA Inc. (WSP), on behalf of Emerson Electric Co., has prepared this work plan to perform additional indoor air and sub-slab vapor sampling of three onsite buildings within Operable Unit 2 (OU-2) of the former Emerson Power Transmission facility (EPT) at 620 South Aurora Street, Ithaca, New York (Figure 1; Site). These three buildings are being renovated for commercial use. Proposed sampling activities and procedures will be conducted to conform with the New York State Department of Health's (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006 and its associated updates. In accordance with the approved Vapor Intrusion Assessment Work Plan dated December 2024, additional sampling is to be conducted before occupancy of the buildings following redevelopment.

Sampling conducted in January of 2025 showed that trichloroethene (TCE) had the highest concentration in sub-slab vapor and indoor air samples (Table 1). Concentrations in the sub-slab vapor ranged from 1.4 µg/m^3 (Building 6A) to 12 µg/m^3 (Building 6) and in the indoor air from 0.93 µg/m^3 (Building 5) to 1.0 µg/m^3 (Building 6A). Based on the NYSDOH matrix, the results indicated that Buildings 5 and 6 require further monitoring and Building 6A requires sources to be identified and resampled or mitigated. Table 1 also includes data collected in 2013, 2023, and 2025. Sample locations and data are shown on Figure 2.

The sampling procedures described herein have been adapted from the Work Plan dated December 20, 2024.

SCOPE OF WORK

The objective of this work plan is to obtain representative vapor intrusion data based on conditions following redevelopment of Buildings 5, 6, and 6A prior to occupancy. Sampling will be scheduled and performed as needed to accommodate the owner's schedule for occupancy, which is currently planned for September 2025. WSP will work with the site developer and occupants to select a day when the buildings will be vacant (i.e., no workers) and all doors and windows can remain closed for the duration of the sampling event. In addition, the selected day for sampling activities will be after all painting, floor sealing, or other work that may interfere with the sample results is completed. Per the requirement in the NYSDEC letter dated January 6, 2025, an additional round of sampling will be conducted during the heating season (i.e., between November and March).

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Figure 3 presents the sample locations within the three buildings based on the redevelopment layout. Sampling will consist of the following tasks in accordance with the NYSDOH guidance.

- Performing building inspections and material inventories prior to sampling in each building,
- Collecting one sub-slab vapor sample in Building 6,
- Collecting five co-located sub-slab soil vapor and indoor air samples,
- Collecting indoor air samples in two of the separated rooms adjacent to Building 6 (formerly used as locker rooms/restrooms);
- Collecting a duplicate of a co-located sub-slab soil vapor and indoor air sample, and;
- Collecting one ambient (outdoor) air sample at an upwind location selected on the day of sampling to evaluate potential background sources for volatile organic compounds (VOCs).

To the extent possible, based on redevelopment activities, the co-located samples will be collected from pre-existing permanent sub-slab soil vapor probes installed during previous events. Where pre-existing probes are not present (e.g., the office and the two former restrooms), new ones will be installed. Samples will be collected over an 8-hour period. The detailed sampling approach is described in the following sections.

SITE INSPECTION AND MATERIALS INVENTORY

A pre-sampling site inspection and materials inventory will be conducted a minimum of 48 hours prior to conducting the sampling activities to provide sufficient time for VOCs emitted from stored products that are subsequently removed from the building or sealed in plastic bags to dissipate. During the site inspection, WSP will evaluate the building's layout and construction, conduct an inventory of materials and equipment stored in the building, and complete NYSDOH's indoor air quality questionnaire and building inventory form (Enclosure A). The materials and equipment of concern include, but are not limited to, petroleum products, gas-powered equipment, paints, varnishes, products containing petroleum distillates or solvents, and pesticides. In general, the volatile ingredients of each material, if available, will be photographed or recorded on the inventory form, and the containers will be scanned with a photoionization detector (RAE Systems ppbRAE, or equivalent) for potential vapor emissions. If the contents of a container are not listed on the label, WSP will record the product name and manufacturer's name and address (if available) on the inventory form. If necessary, WSP will request copies of safety data sheets for products used during the redevelopment activities. WSP will recommend that the owner of OU-2 remove from the building any materials that contain site-related VOCs or WSP will seal the containers in plastic bags, if practicable. The inspection will include an evaluation of potential preferential pathways for VOCs to enter the structure, such as areas of exposed subsurface, cracks in the slab and foundation, elevator pits, tunnels, crawl spaces, and utility penetrations. During the pre-sampling inspection, known locations of building footers, underground utilities, and other below grade structures (e.g., vaults, tunnels, etc.) will be noted on the inventory.

SUB-SLAB VAPOR SAMPLING

Sub-slab samples will be collected from existing soil vapor probes whenever possible. If existing probes cannot be used, a new sub-slab soil vapor probe will be installed within the buildings by drilling through the concrete floor with a hammer drill (or similar) and installing a Vapor Pin® in accordance with the manufacturer's instructions (Enclosure B). To the extent practical, WSP will coordinate with the building tenants/occupants to determine locations of the probes that will not interfere with the planned use of the space. The probes will be installed with flush-mounted covers for protection from pedestrian and forklift traffic, and will be left in place for future monitoring, as required.

Initially, the differential pressure between the sub-slab and indoor space will be recorded at each sub-slab sample location using a Zephyr Graywolf digital manometer. Following collection of the differential pressures, a short piece of Tygon™ tubing will be connected to the Vapor Pin® barb fitting, and a section of 0.25-inch outer diameter Teflon™-lined or Nylaflow® tubing will be inserted into the Tygon™ tubing. Additional tubing will be attached to this section via fittings such as 3- or 4-way valves between the probe and a 6-liter canister (e.g., SUMMA® canister). Next, a leak test will be performed at each location to evaluate the integrity of the sub-slab probe seal and ensure that the soil vapor samples will not be diluted by indoor air. To perform the test, an enclosure or shroud will be placed over the sub-slab sample probe and associated tubing and fittings between the probe and 6-liter canister which constitutes the sampling train. The tubing from the Vapor Pin® probe will pass under the edge of the enclosure, or through an opening

in the enclosure, to allow monitoring of the sub-slab soil vapor from outside of the enclosure using an electronic helium detector (Dielectric Technologies-brand Electronic Leak Detector, or equivalent). After the monitoring equipment is in place, the shroud will be charged with helium through an opening in the enclosure. The sample probe will then be monitored for a minimum of 2 minutes to verify that the system is not short-circuiting to the helium-enriched atmosphere above the concrete slab. The probe seal will be enhanced and retested, if necessary. Helium detections in the recovered sub-slab vapor up to 10 percent of the helium concentrations inside the shroud will be considered acceptable.

Before each sub-slab soil vapor sample is collected, a pre-sample purge will be conducted to remove dilution air from the tubing and probe assembly attached to the 6-liter canister. Three probe-volumes of air will be evacuated from each sample location at a rate not exceeding 0.2 liter per minute using a pump or syringe. The purged air will be collected in a Tedlar® bag(s) and monitored periodically with a photoionization detector for organic vapors. After purging, the purging section of tubing will be isolated from the sampling train using appropriate fittings and the pump will be removed. The evacuated, laboratory-certified clean, 6-liter canister's valve will then be opened initiating sample collection and the initial vacuum reading, ambient temperature, and barometric pressure will be recorded. The sample collection time, approximately 8 hours, will be controlled by the pre-set pneumatic flow controller. Once the required pressure is reached (between 2 to 10 inches of Hg on the regulator dial), the final vacuum reading, ambient temperature, and barometric pressure will be recorded, and sample collection will be completed by closing the canister valve. The sample train will then be disassembled and the Vapor Pin® port closed. The sample name, location, time and date of sample collection, sample canister number, and the analytical method to be used will be recorded on the chain-of-custody form and in the field logbook.

INDOOR AND OUTDOOR AIR SAMPLING

Indoor air samples will be collected concurrently with the sub-slab soil vapor samples to evaluate the potential for vapor intrusion of VOCs into each building. During each event in which indoor air samples are collected, an outdoor air sample will be collected upwind of the property concurrently with the indoor air samples to assess site-specific background outdoor air quality. The outdoor air sample location will be selected in the field based on the wind direction. The indoor and outdoor air samples will be collected using evacuated, laboratory-certified clean, 6-liter canisters placed approximately 5 feet above ground surface to be representative of the breathing zone. Physical and visual barriers will be placed around the canisters, if necessary, so that they are not disturbed during sample collection; these barriers will be placed in a manner that will not obstruct air flow around the canisters.

The canister valves will then be opened initiating sample collection, and the initial vacuum reading, ambient temperature, barometric pressure, and wind speed and direction (e.g., obtained from online weather service) will be recorded. Any significant precipitation received within 12 hours of commencing the sampling event will also be recorded. The sample collection time will be controlled by the pre-set pneumatic flow controller. Once the required pressure is reached (between 2 to 10 inches of Hg), the final vacuum reading, ambient temperature, barometric pressure, and wind speed and direction (e.g., obtained from on-line weather service) will be recorded, and sample collection will be completed by closing the canister valve. The sample name, location, time and date of sample collection, canister and regulator number, and the analytical method to be used will be recorded on the chain-of-custody form and in the field logbook.

QUALITY ASSURANCE/QUALITY CONTROL

The canisters used for the sampling activities will be 100% individually certified-clean by the laboratory by analyzing the ambient air inside a clean canister by USEPA Method TO-15. If no target compounds are detected at concentrations above the reporting limits, then the canister is evacuated again, and the canister is available for sampling. If target compounds are detected at concentrations above the reporting limits, then the canister must be recleaned and reanalyzed for the target compounds.

A duplicate indoor air sample and a duplicate sub-slab vapor sample will be collected from one of the proposed sample locations for each sample type. The duplicate samples will be collected at the same time and from the same sample location using a "T-splitter" provided by the laboratory or collected at the same time right next to the original location, no more than 1-foot apart. The field duplicate identity will not be provided to the laboratory. Field duplicates are used to assess the precision of the sampling process.

LABORATORY ANALYSIS

All samples will be sealed, labeled, and placed in a shipping container for transport under ambient conditions to ALS Group laboratory in Simi Valley, California, under strict chain-of-custody procedures. As specified in the approved December 2024 Work Plan, the laboratory will analyze the samples using USEPA Method TO-15 for the following eight site-related CVOCs: 1,1,1-trichloroethane, 1,2-dichloroethane, cis-1,2-dichoroethene, trans-1,2-dichloroethene, methylene chloride, tetrachloroethene, trichloroethene, and vinyl chloride; two additional CVOCs from the NYSDOH Decision Matrices: 1,1-dichloroethene and carbon tetrachloride; and one additional breakdown compound of CVOCs previously detected onsite: 1,1-dichloroethane. The laboratory will ensure that the method reporting limits will meet the concentrations in the NYSDOH matrix per analyte.

PROJECT SCHEDULE AND REPORTING

WSP anticipates initiating sampling activities in late August or early September 2025, pending completion of all buildout tasks. The samples will be analyzed on a 3-day turnaround basis. WSP anticipates submitting the preliminary results to the NYSDEC and NYSDOH within 5 days following receipt from the laboratory. A report will be submitted to the NYSDEC and NYSDOH within 3 weeks following receipt of the final laboratory deliverable. The report will include, at a minimum, copies of the building questionnaires and inventories, a description of the sampling activities, tables summarizing the sample results, a figure showing the sample locations, and recommendations for additional actions.

Please feel free to contact me at (703) 742-5905 or Dave Rykaczewski at (412) 375-0282 with any questions or if you require additional information.

Kind regards,

Lisa Kelly
Vice President

David Rykaczewski
Vice President

DAR :LKK :dar
\\corp.pbwan.net\us\environmental\ES-JointClients\Emerson\ITHACA_$$RD-RA\Vapor Intrusion\Work Plans\Buildings 5,6,6A\workplan.hw755010.2025-08-06 Buildings 5,6,6A Pre-Occupancy VI Testing.docx

cc:\encl. Stephen L. Clarke, Emerson
Lisa Douglas, PE PMP, Emerson
Anthony Perretta, NYSDOH

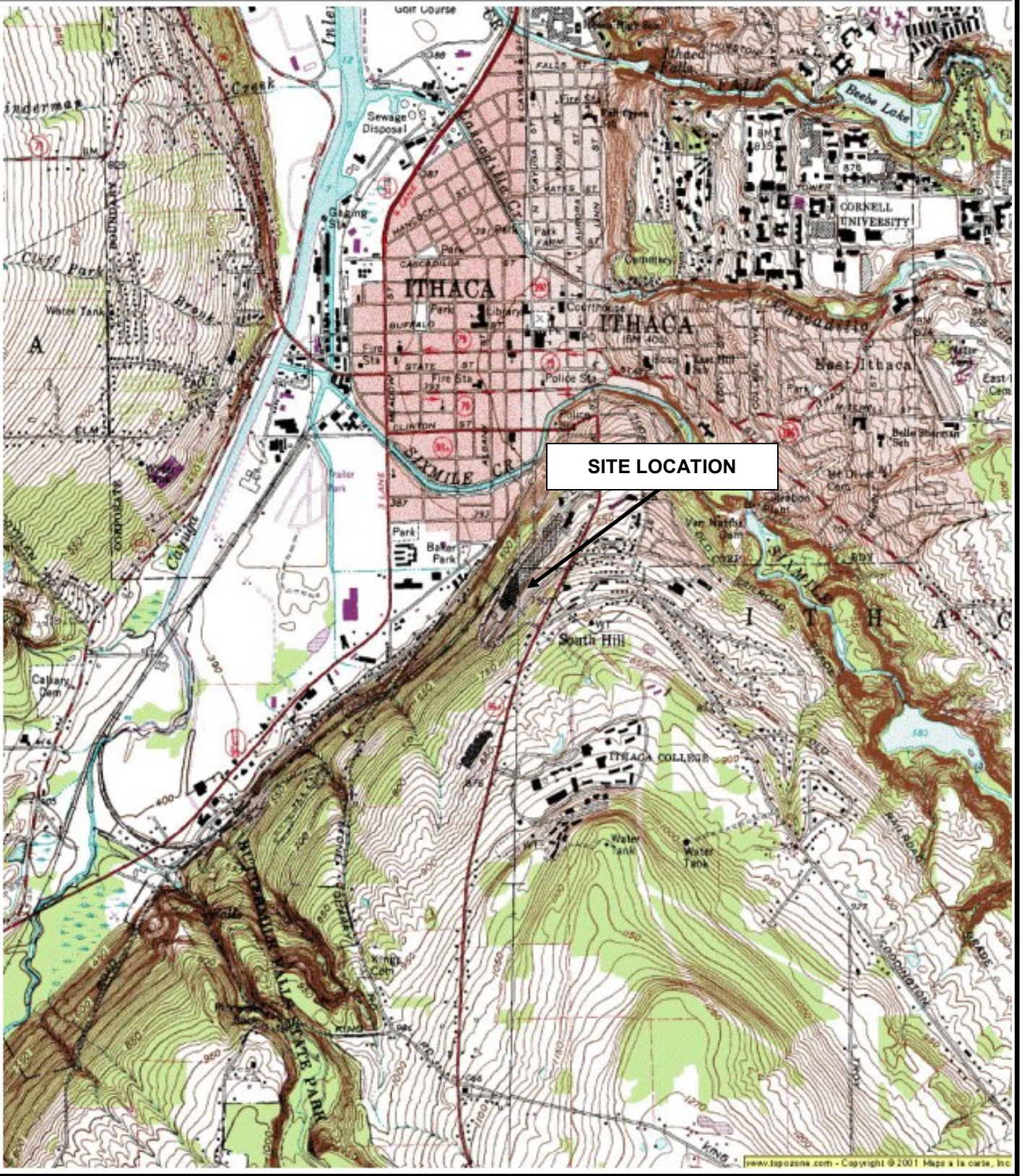
FIGURES

DWG. Name: 3140151.0001-Figure 1

Checked: JRB 10/18/21
Approved: BAP 10/18/21

Drawn By: RLD 10/15/21

A



REFERENCE:
7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE
ITHACA, NEW YORK 1976
SCALE 1:24,000

QUADRANGLE LOCATION

N

0 1000 2000 4000

SCALE, FEET

WSP USA Inc.
13530 DULLES TECHNOLOGY DR.
SUITE 300
HERNDON, VA 20171
TEL: +1 703.709.6500

FIGURE 1

SITE LOCATION

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON

Bldg. 5 - Basement/Lower				
VOCs ($\mu g/m^3$)	3/16/2023		1/6/2025	
	SS	IA	SS	IA
1,1,1-TCA	300 D	0.1 J	280 D	0.18
1,1-DCE	0.17 U	0.16 U	2.4	0.11 U
CT	2,2	0.47	1.7	0.43
cis-DCE	0.17 U	0.16 U	0.11 U	0.12 U
MC	6.4	0.39 J	0.48 J	0.33 J
PCE	21	0.32	17	0.22
TCE	9.9	0.76	7.8	0.93
VC	0.22	0.16 U	0.082 U	0.088 U

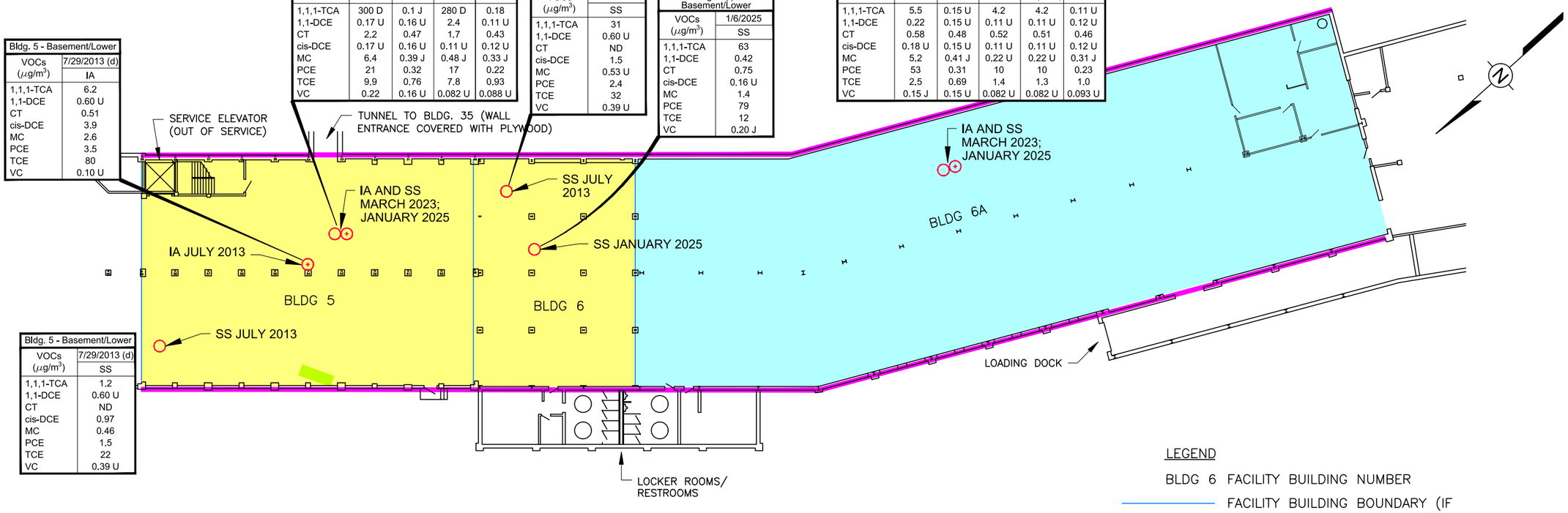
Bldg. 6 (f) - Basement/Lower	
VOCs ($\mu g/m^3$)	7/29/2013
	SS
1,1,1-TCA	31
1,1-DCE	0.60 U
CT	ND
cis-DCE	1.5
MC	0.53 U
PCE	2.4
TCE	32
VC	0.39 U

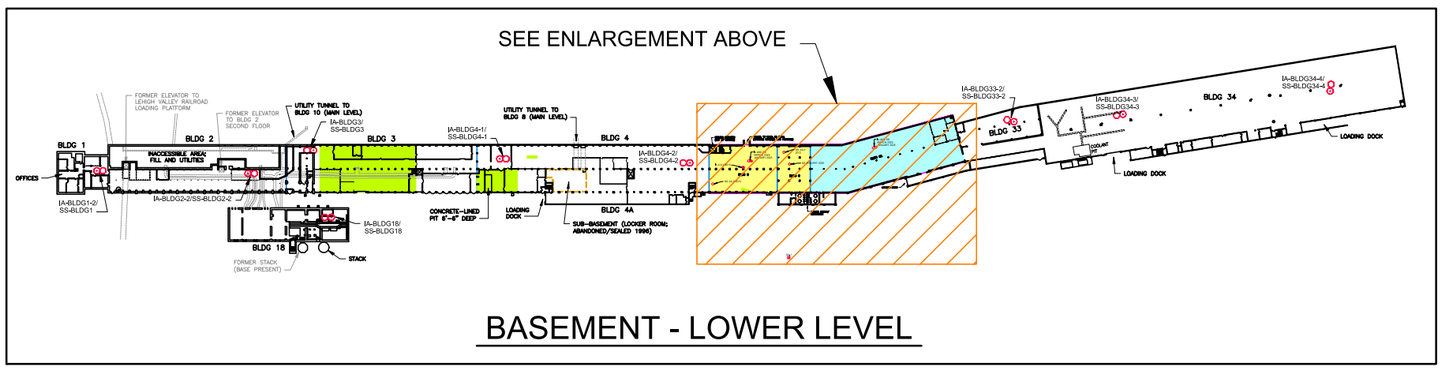
Bldg. 6 (f) - Basement/Lower	
VOCs ($\mu g/m^3$)	1/6/2025
	SS
1,1,1-TCA	63
1,1-DCE	0.42
CT	0.75
cis-DCE	0.16 U
MC	1.4
PCE	79
TCE	12
VC	0.20 J

Bldg. 6A - Basement/Lower					
VOCs ($\mu g/m^3$)	3/16/2023		1/6/2025		
	SS	IA	SS	SS (DUP)	IA
1,1,1-TCA	5.5	0.15 U	4.2	4.2	0.11 U
1,1-DCE	0.22	0.15 U	0.11 U	0.11 U	0.12 U
CT	0.58	0.48	0.52	0.51	0.46
cis-DCE	0.18 U	0.15 U	0.11 U	0.11 U	0.12 U
MC	5.2	0.41 J	0.22 U	0.22 U	0.31 J
PCE	53	0.31	10	10	0.23
TCE	2,5	0.69	1.4	1.3	1.0
VC	0.15 J	0.15 U	0.082 U	0.082 U	0.093 U

Bldg. 5 - Basement/Lower	
VOCs ($\mu g/m^3$)	7/29/2013 (d)
	IA
1,1,1-TCA	6.2
1,1-DCE	0.60 U
CT	0.51
cis-DCE	3.9
MC	2.6
PCE	3.5
TCE	80
VC	0.10 U

Bldg. 5 - Basement/Lower	
VOCs ($\mu g/m^3$)	7/29/2013 (d)
	SS
1,1,1-TCA	1.2
1,1-DCE	0.60 U
CT	ND
cis-DCE	0.97
MC	0.46
PCE	1.5
TCE	22
VC	0.39 U





LEGEND

- BLDG 6 FACILITY BUILDING NUMBER
- FACILITY BUILDING BOUNDARY (IF INTERIOR WALL NOT PRESENT)
- STEEL COLUMN
- CONCRETE COLUMN
- UTILITY COVER
- NO FLOOR SLAB PRESENT; EXPOSED SUBGRADE
- INDOOR AIR SAMPLE (IA)
- SUB-SLAB SOIL VAPOR SAMPLE (SS)
- OUTDOOR AIR SAMPLE (MARCH 2023)
- MONITOR
- IDENTIFY SOURCES AND SAMPLE OR MITIGATE
- MITIGATE
- SLAB ON GRADE
- 1,1,1-TCA 1,1,1-TRICHLOROETHANE
- 1,1-DCE 1,1-DICHLOROETHENE
- CT CARBON TETRACHLORIDE
- cis-DCE cis-1,2-DICHLOROETHENE
- MC METHYLENE CHLORIDE
- PCE TETRACHLOROETHENE
- TCE TRICHLOROETHENE
- VC VINYL CHLORIDE

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

Drawn By: RLB 07/22/2025
Checked: NSH 07/22/2025
Approved:
Dwg Name: 314P5608.001-B45

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

FIGURE 2

BUILDINGS 5, 6, AND 6A
INDOOR AIR/SUB-SLAB SAMPLE LOCATIONS

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11 STANWIX STREET
SUITE 950
PITTSBURGH, PA 15222
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B

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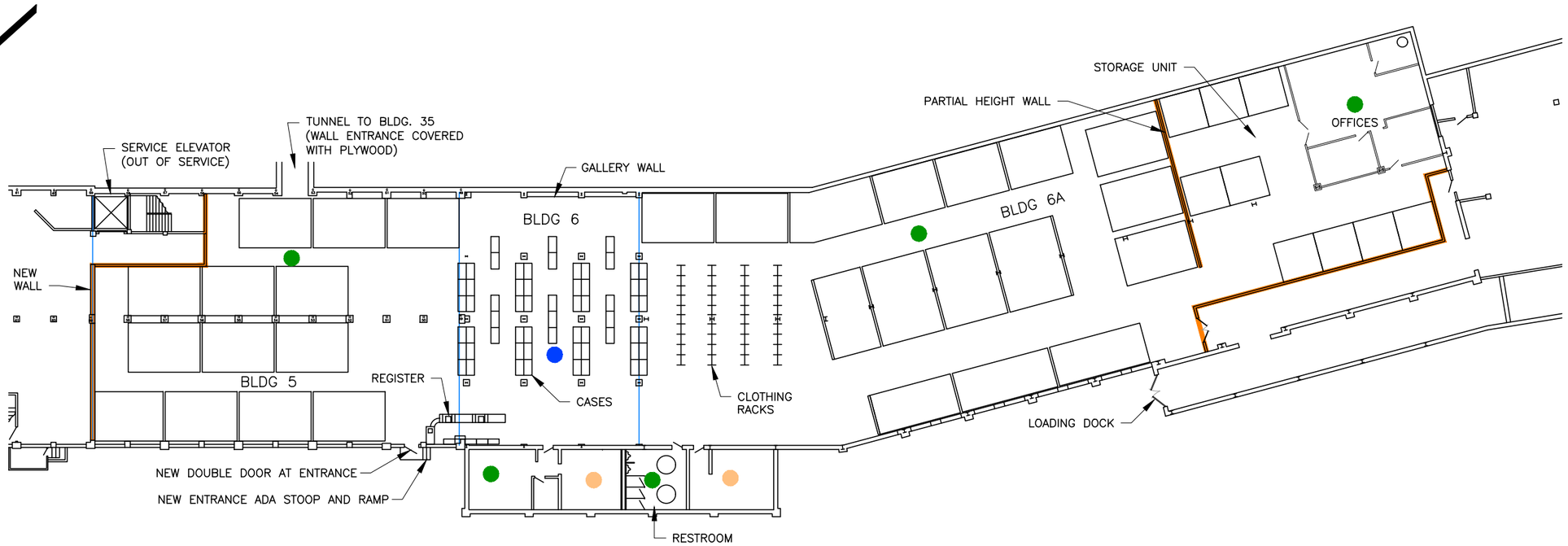
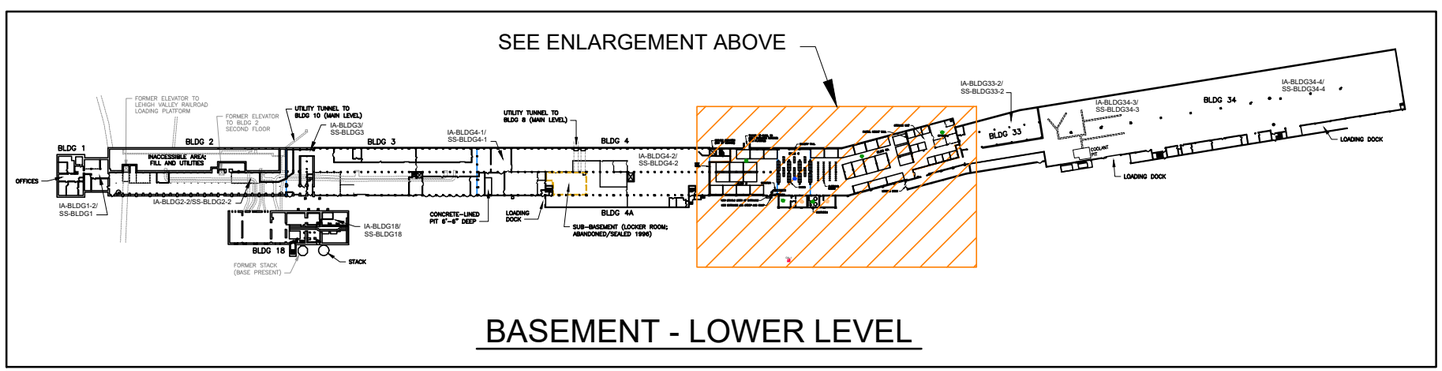


OA-1



BASEMENT - LOWER LEVEL

0 100 200 400

SCALE, FEET

LEGEND

- BLDG 6 FACILITY BUILDING NUMBER
- FACILITY BUILDING BOUNDARY (IF INTERIOR WALL NOT PRESENT)
- H STEEL COLUMN
- C CONCRETE COLUMN
- CO-LOCATED INDOOR AIR AND SUB-SLAB VAPOR SAMPLE
- SUB-SLAB SOIL VAPOR SAMPLE
- INDOOR AIR SAMPLE
- OUTDOOR AIR SAMPLE (MARCH 2023)

NOTE:

FEATURES INSIDE THE BUILDING ARE PROPOSED AND MAY NOT MATCH FINAL BUILDOUT.

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

Drawn By: RAZ 07/14/2025
Checked: LKK 08/01/2025
Approved: DJH 08/01/2025
Dwg Name: 314P5608.001-B46

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

FIGURE 3

BUILDINGS 5, 6, AND 6A PRE-OCCUPANCY
INDOOR AIR/SUB-SLAB SAMPLE LOCATIONS

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B

TABLE

Table 1

Indoor Air and Sub-Slab Soil Vapor Sample Results
Buildings 5, 6, and 6A
Former Emerson Power Transmission
Ithaca, New York (a)

Building Number:	Building 5						Building 6 (f)		Building 6A					Outdoor Air		
Building Level:	Basement/Lower						Basement/Lower		Basement/Lower							
Sample Date (b):	7/29/2013 (d)		3/16/2023		1/6/2025		7/29/2013	1/6/2025	3/16/2023		1/6/2025			7/29/2013	3/16/2023	1/6/2025
Sample Type:	SS	IA	SS	IA (e)	SS	IA	SS		SS	IA	SS	SS (DUP)	IA			
VOCs (µg/m^3) (c)																
1,1,1-Trichloroethane	1.2	6.2	300 D	0.1 J	280 D	0.18	31	63	5.5	0.15 U	4.2	4.2	0.11 U	ND	0.14 U	0.088 U
1,2-Dichloroethane	ND	ND	0.17 U	0.16 U	0.086 U	0.091 U	ND	0.13 U	0.18 U	0.087 J	0.085 U	0.085 U	0.096 U	ND	0.089 J	0.079 U
cis-1,2-Dichloroethene	0.97	3.9	0.17 U	0.16 U	0.11 U	0.12 U	1.5	0.16 U	0.18 U	0.15 U	0.11 U	0.11 U	0.12 U	ND	0.14 U	0.10 U
Methylene chloride	0.46	2.6	6.4	0.39 J	0.48 J	0.33 J	0.53 U	1.4	5.2	0.41 J	0.22 U	0.22 U	0.31 J	ND	0.39 J	0.33 J
Tetrachloroethene	1.5	3.5	21	0.32	17	0.22	2.4	79	53	0.31	10	10	0.23	ND	0.12 J	0.092 U
trans-1,2-Dichloroethene	NA	NA	0.17 U	0.16 U	0.11 U	0.11 U	NA	0.16 U	0.18 U	0.15 U	0.11 U	0.11 U	0.12 U	NA	0.14 U	0.099 U
Trichloroethene	22	80	9.9	0.76	7.8	0.93	32	12	2.5	0.69	1.4	1.3	1.0	ND	0.14 U	0.096 U
Vinyl chloride	0.39 U	0.10 U	0.22	0.16 U	0.083 U	0.088 U	0.39 U	0.20 J	0.15 J	0.15 U	0.082 U	0.082 U	0.093 U	ND	0.14 U	0.076 U
Carbon tetrachloride	ND	0.51	2.2	0.47	1.7	0.43	ND	0.75	0.58	0.48	0.52	0.51	0.46	ND	0.46	0.45
1,1-Dichloroethene	0.60 U	0.60 U	0.17 U	0.16 U	2.4	0.11 U	0.60 U	0.42	0.22	0.15 U	0.11 U	0.11 U	0.12 U	NA	0.14 U	0.099 U
1,1-Dichloroethane	ND	0.95	22	0.16 U	19	0.12 U	2.8	6.3	0.18 U	0.15 U	0.11 U	0.11 U	0.13 U	ND	0.14 U	0.10 U

a\ U = not detected (method detection limit provided); D = diluted; J = estimated concentration; ND = not detected (laboratory method detection limit not available); NSA= not analyzed;
IA = Indoor Air; SS = Sub-Slab; VOCs = volatile organic compounds; µg/m^3 = microgram per cubic meter; W = West; E = East; DUP = Duplicate
b\ 2013 samples were collected by LaBella & Associates
c\ The first eight compounds are the site-related chlorinated VOCs; the remaining three chlorinated VOCs are also regulated by the New York State Department of Health
d\ Location for the indoor air and sub-slab vapor samples collected in 2013 are not in the same location as in 2023 and 2025.
e\ Indoor air sample was collected at a location in Building 5 to also cover Building 6 in 2023 and 2025 since the buildings were open to each other.
f\ Building 6 SS data coupled with Building 5 IA data for matrix determination.

The following color codes are based on the New York State Department of Health 2006 Soil Vapor Intrusion Guidance document Soil Vapor/Indoor Air Matrices (and any updates)
Mitigate
Monitor
Identify Sources and Sample or Mitigate
No Further Action

ENCLOSURE A

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

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

If the property is residential, type? (Circle appropriate response)

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

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

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

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

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

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

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

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

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

_____

_____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

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

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

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

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

_____

_____

_____

_____

7. OCCUPANCY

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

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

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

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify_____

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

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

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

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

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

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

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

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

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

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

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

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

If yes, what types of solvents are used? _____

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

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

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

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

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

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

11. FLOOR PLANS

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

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

ENCLOSURE B

Standard Operating Procedure

Installation and Extraction
Vapor Pin® Sampling Device

Scope & Purpose

Scope

This standard operating procedure describes the installation and extraction of the Vapor Pin® Sampling Device for use in sub-slab soil-gas sampling.

Purpose

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin® Sampling Device.

Equipment Needed

- Vapor Pin® Sampling Device
- Vapor Pin® Sleeves
- Vapor Pin® Cap
- Installation/Extraction Tool
- Rotary Hammer Drill
  - ⅝-Inch (16mm) diameter hammer bit
  - 1½-Inch (38mm) diameter hammer bit for flush mount applications
- ¾-Inch (19mm) diameter bottle brush
- Wet/Dry Vacuum with HEPA filter (optional)
- Dead Blow Hammer
- VOC-free hole patching material (hydraulic cement) and a putty knife or trowel
  - This is for repairing the hole following the extraction of the Vapor Pin® Sampling Device

Installation Procedure

☐ **1.** Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

☐ **2.** Set up wet/dry vacuum to collect drill cuttings.

☐ **3.** For a temporary installation, drill a ⅝-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. The hole must be ⅝-inch (16mm) in diameter to ensure a seal.

☐ • If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. We highly recommend using the Stainless Steel Drilling Guide and to reference the Standard Operating Procedure Drilling Guide & Secure Cover.

☐ **4.** Remove the drill bit, brush the hole with the bottle brush and remove the loose cuttings with the vacuum.

☐ **5.** Assemble the Vapor Pin® Sampling Device and Vapor Pin® Sleeve (Figure 1).

☐ **6.** Place the lower end of the Vapor Pin® Sampling Device assembly into the drilled hole. Place the small hole located in the handle of the Installation/Extraction Tool, over the Vapor Pin® to protect the barb fitting and tap the Vapor Pin® into place using a dead blow hammer (Figure 2). Make sure the Installation/Extraction Tool is aligned parallel to the Vapor Pin® to avoid damaging the barb.

☐ • During installation, the Vapor Pin® Sleeve may form a slight bulge between the slab and the Vapor Pin® Sampling Device shoulder.

☐ **7.** Place the Vapor Pin® Cap on the Vapor Pin® to prevent vapor loss prior to sampling (Figure 3).

☐ **8.** For flush mount installations, cover the Vapor Pin® with a flush mount cover, using either the plastic cover or the optional Stainless Steel Secure Cover (Figure 4).

☐ **9.** Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Sampling

- ☐ **1.** Remove the Vapor Pin® Cap and connect your sample tubing to the barb fitting of the Vapor Pin® Sampling Device.
- ☐ **2.** Create a connection by using a short piece of Tygon™ tubing to join the Vapor Pin® Sampling Device with the Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the Vapor Pin® Sampling Device as possible to minimize contact between soil gas and Tygon™ tubing. You do not **have** to use Nyflaflow tubing, any stiff tubing will suffice.
- ☐ **3.** Prior to sampling, conduct a leak test in accordance with applicable guidance. If a leak test is not specified, refer to the SOP Leak Testing the Vapor Pin® Sampling Device, via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1½ inch (38mm) hole.

Figure 5.

Figure 6.

Figure 7.

Extraction Procedure & Reuse Notes

1. Remove the protective cap, and thread the Installation/Extraction Tool onto the Vapor Pin® Sampling Device (Figure 7). Turn the tool clockwise continuously, don't stop turning, the Vapor Pin® Sampling Device will feed into the bottom of the Installation/Extraction Tool and will extract from the hole like a wine cork, **DO NOT PULL!**
2. Fill the void with hydraulic cement and smooth with a trowel or putty knife.
3. Prior to reuse, remove the silicon Vapor Pin® Sleeve and Vapor Pin® Cap and discard. Decontaminate the Vapor Pin® Sampling Device in a Alconox® solution, then heat in an oven to a temperature of 265° F (130°C). For Stainless – ½ hour, Brass 8 minutes.

Standard Operating Procedure

Drilling Guide & Secure Cover

Scope & Purpose

Scope

This standard operating procedure (SOP) describes the methodology to use the Vapor Pin® Sampling Device Drilling Guide and Secure Cover to install and secure a Vapor Pin® Sampling Device in a flush mount configuration.

Purpose

The purpose of this SOP is to detail the methodology for installing a Vapor Pin® Sampling Device and Secure Cover in a flush mount configuration. The flush mount configuration reduces the risk of damage to the Vapor Pin® Sampling Device by foot and vehicular traffic, keeps dust and debris from falling into the flush mount hole, and reduces the opportunity for tampering.

Equipment Needed

- Vapor Pin® Sampling Device Secure Cover (Figure 1)
- Vapor Pin® Sampling Device Drilling Guide (Figure 2)
- Rotary Hammer Drill
  - ⅝-Inch (16mm) diameter hammer bit
  - 1½-Inch (38mm) diameter hammer bit for flush mount applications
- Assembled Vapor Pin® Sampling Device
- #14 Spanner Wrench
- Wet/Dry vacuum with HEPA filter (optional)
- Personal Protective Equipment (PPE)

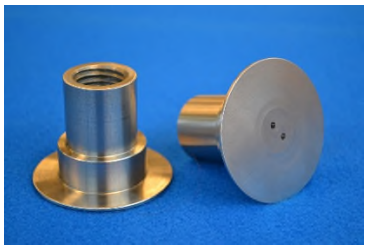

Figure 1

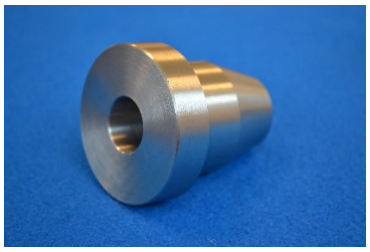

Figure 2

Installation Procedure

- ☐ **1.** Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- ☐ **2.** Set up wet/dry vacuum to collect drill cuttings.
- ☐ **3.** While wearing PPE, drill a 1½-inch (38mm) diameter hole into the concrete slab to a depth of approximately 1¾-inches (45mm). Pre-marking the desired depth on the drill bit with tape will assist in this process.
- ☐ **4.** Remove cuttings from the hole and place the Drilling Guide in the hole with the conical end down (Figure 3). The hole is sufficiently deep if the flange of the Drilling Guide lies flush with the surface of the slab. Deepen the hole as necessary but avoid drilling more than 2 inches (50.8mm) into the slab, as the threads on the Secure Cover may not engage properly with the threads on the Vapor Pin® Sampling Device.
- ☐ **5.** When the 1½-inch (38mm) hole is drilled to the proper depth, replace the drill bit with a ⅝-inch (16mm) bit, insert the bit through the Drilling Guide (Figure 4), and drill through the slab. The Drilling Guide will help to center the hole for the Vapor Pin® Sampling Device and keep the hole perpendicular to the slab.
- ☐ **6.** Remove the bit and drilling guide, clean the hole, and install the Vapor Pin® Sampling Device in accordance with the SOP “Installation and Extraction of the Vapor Pin® Sampling Device.”

- ☐ **7.** Screw the Secure Cover onto the Vapor Pin® Sampling Device and tighten using a #14 Spanner Wrench by rotating it clockwise (Figure 5). Rotate the cover counterclockwise to remove it for subsequent access.
- ☐ **8.** For flush mount installations, cover the Vapor Pin® with a flush mount cover, using either the plastic cover or the optional Stainless Steel Secure Cover (Figure 4).
- ☐ **9.** Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

Figure 3

Figure 4

Figure 5

Limitations

On slabs less than 3 inches thick, it may be difficult to obtain a good seal in a flush mount configuration with Vapor Pin® Sampling Device. But a perfect alternative for that would be our Mini Vapor Pin®!