**VIA ELECTRONIC MAIL**

March 6, 2023

Karen A. Cahill
Division of Environmental Remediation
New York State Department of Environmental Conservation
Region 7
615 Erie Boulevard West
Syracuse, NY 13204-2400

**Subject:** **Operable Unit 2 (OU-2) Vapor Intrusion Assessment Work Plan Operable Unit 2 (OU-2) Vapor Intrusion Assessment Work Plan -Revised; Former Emerson Power Transmission Facility, Ithaca, New York (NYSDEC Site No. 755010)**

Dear Ms. Cahill:

In accordance with the *Interim Site Management Plan* dated October 14, 2022 and the *Feasibility Study* conditionally approved by the New York State Department of Environmental Conservation (NYSDEC) on October 5, 2020, WSP USA Inc. (WSP), on behalf of Emerson Electric Co., has prepared this work plan (revised) to a perform vapor intrusion assessment of several 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). Proposed sampling activities and procedures will be conducted to conform with the New York State Department of Health (NYSDOH)'s Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006 and its associated updates. The work plan has been revised to address comments received from the NYSDEC in a letter dated February 28, 2023. A brief site history followed by the proposed sampling scope of work, project schedule, and reporting are presented below.

# SITE LOCATION AND BACKGROUND INFORMATION

The Site has a record of industrial use dating back to 1906, when the Morse Industrial Corporation (Morse) founded the facility. In 1928, Morse was acquired by Borg-Warner Corporation, which sold the facility to Emerson Electric Co. in 1983. Eventually, the facility came to be owned and operated by EPT, a wholly owned subsidiary of Emerson. The termination of industrial operations occurred between 2009 and 2011. Thereafter, in 2015, in connection with Emerson's sale of EPT and other companies in its Power Transmission Solutions business, ownership of the facility property was transferred to another Emerson subsidiary, EMERSUB 15, LLC. In December 2022, ownership of the majority of the facility property with the exception of Operation Unit 1 (OU-1) (Figure 2) was transferred to Shift Chainworks Owner I LLC with the intention of redeveloping the Site for mixed use (restricted-residential, commercial, and/or industrial).

Environmental investigation and remedial activities at the facility have been occurring since the 1980s. The initial impetus for the investigation was the discovery of groundwater contaminated with chlorinated volatile organic compounds (cVOCs), including trichloroethylene (TCE), released from the historic fire water reservoir. Although this contamination was discovered during EPT's ownership of the Site, it related back to industrial activities preceding Emerson's acquisition in 1983. In 1987, Emerson, EPT, and the New York State Department of Environmental Conservation (NYSDEC) entered into an Administrative Order on Consent (Index No. A7-0125-87-09), which was subsequently amended to remove EPT as a respondent in 2014. In 1994, NYSDEC approved a Record of Decision (ROD) that called for the implementation of a dual-phase extraction system to address the groundwater contamination in the fire water reservoir area. The system commenced operation in 1996 and was expanded in 2016.

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Over time, the scope of the investigation has expanded beyond the groundwater contamination associated with the former fire-water reservoir, resulting in the identification of other areas of concern (AOCs). In all, the site investigation has identified thirty-five (35) AOCs, one of which (AOC 35 – Isolated Locations), encompasses twelve (12) distinct areas of the Site. The AOCs are located within two Operable Units ("OUs") at the Site. OU-1 includes the location of the former fire water reservoir and the dual-phase extraction and treatment system (AOC 24), while OU-2 includes the remaining AOCs. The identification of the additional AOCs prompted the issuance of a ROD Amendment in 2009, requiring the performance of additional investigative and remedial activities at the Site. The boundary of OU-2 and the area of the former EPT facility property subject to the 1987 Administrative Order on Consent was significantly reduced in 2018, when NYSDEC approved the removal of approximately 34.3 acres of largely undeveloped land from OU-2 (the "Boundary Modification Area"). A condition to the boundary modification was the filing of a deed restriction requiring soil vapor assessments prior to any habitable structures being connected to or being constructed within 40 feet from the centerline on either side of the sewer running from the former NCR property and the Ithaca College lateral. The NYSDOH requested the restriction to account for potential vapor intrusion. The deed restriction was filed and recorded on September 6, 2018. As shown in Figure 2, the southern portion of the sewer and the lateral are no longer within the limits of Site No. 755010.

An Interim Remedial Measure (IRM) Work Plan, approved by NYSDEC in August 2018, was developed to address the excavation of shallow soil in the former degreaser area as well as other areas of OU-2 to meet applicable soil cleanup objectives (SCOs), reduce potential migration of constituents of concern to groundwater, and facilitate future use of the property consistent with L Enterprises, LLC redevelopment plans. The IRM activities were completed in August 2019. Approximately 4,550 cubic yards of soil were excavated during the IRM of which approximately 200 cubic yards is attributable to soils removed from areas inside the facility, beneath the concrete slab.

## PREVIOUS VAPOR INTRUSION ASSESSMENTS

As a result of expanding investigations around the site, sub-slab vapor and indoor air samples were collected by WSP on behalf of EPT between 2005 and 2010 and by LaBella Associates on behalf of L Enterprises, LLC in 2013 to assess the potential for vapor intrusion into facility buildings. Figure 3 presents the locations of the previous samples and potential actions to be taken based on a comparison of the results to the NYSDOH matrices (A, B, and C; Figure 3): (1) No Further Action, (2) Identify Sources and Resample or Mitigate, (3) Monitor, or (4) Mitigate. The figure identifies the most conservative action to be considered for each building in which testing was performed; the primary driver is TCE.

When considering the three most recent indoor air and sub-slab soil vapor sampling events conducted in 2009 through 2013, concentrations of TCE in indoor air exceeding NYSDOH's 'mitigate' decision matrix threshold of 1 µg/m$^3$ ranged from 2.3 µg/m$^3$ in Building 2 to 80 µg/m$^3$ in Buildings 5 and 6. While no sub-slab soil vapor concentrations exceeded the NYSDOH's mitigate threshold of 60 µg/m$^3$ during this timeframe, sub-slab soil vapor concentrations of TCE exceeded the NYSDOH decision matrix minimum action level of 6 µg/m$^3$ in five buildings (Buildings 2, 5, 6, 9, and 13A). Concentrations of TCE in sub-slab soil vapor exceeding the minimum action level in these buildings ranged from 6.4 µg/m$^3$ in Building 2 to 32 µg/m$^3$ in Building 6. Based on this historical data, 'No Further Action' was identified for Buildings 14, 15, 17, and 35, most of which are upgradient from areas of the Site observed to have soil and/or groundwater impacted by VOCs. Historical vapor intrusion sampling results are included in Table 1.

# OBJECTIVE AND SAMPLING METHODOLOGY

Historic sub-slab vapor and indoor air sample data suggests that indoor air is affected by vapor intrusion in some areas of the facility as the result of the volatilization of CVOCs from soil and/or groundwater. The objective of this work plan is to obtain representative vapor intrusion data based on current conditions, following implementation of the IRMs to address soil and groundwater contamination. Based on a review of the matrices and historical data, any building currently classified as 'identify sources and resample or mitigate', 'monitor', or 'mitigate', will also be further evaluated through one round of additional sampling per building.

Data obtained as the result of this assessment and the results of historical soil vapor intrusion sampling data will be considered when determining appropriate measures during site redevelopment including any interim periods where portions of the facility may become occupied and temporarily utilized for material and equipment staging and/or office facilities. Based on the results, measures will be implemented as appropriate based on the future use of the structures and consistent with the NYSDOH Soil Vapor/Indoor Air matrices. The future use of the buildings is proposed to correspond with the use restrictions delineated on Figure 4. As shown, some of the buildings are planned for demolition; however, the proposed plans are dynamic and can change over time as redevelopment takes place over the next several years. Therefore, sampling of existing Buildings 6A and 9 are included in the current scope of work.

Sampling activities detailed in the sections below will be implemented in an approach consistent with the owner's redevelopment schedule. Therefore, priority will be given to sampling buildings first expected to undergo occupancy.

# PROPOSED SCOPE OF WORK

The following scope of work is proposed to further evaluate potential vapor intrusion into the former manufacturing buildings. The proposed vapor intrusion assessment will be composed of a single event per building constituting the heating season (winter/early spring) in accordance with the NYSDOH guidance, consisting of the following tasks:

- Performing building inspections and material inventories prior to sampling in each building,
- Collecting 29 sub-slab soil vapor and 30 indoor air samples, and;
- Collecting one or more ambient (outdoor) air samples at upwind locations selected on the day of sampling, per sampling event, to evaluate potential background sources for VOCs. If one building is sampled on a given day, one upwind ambient air sample will be collected; however, if more than one building is sampled on a given day, then two upwind ambient air samples will be collected.

The proposed sample locations are subject to change based on accessibility, potential below-grade utilities, and the OU-2 owner's operations. Samples will be collected at the lowest level of the associated building as follows. Due to split level construction, some buildings such as Building 24 will have two separate portions of the structure, identified by 'Upper' and 'Lower', where the slab and its foundation are at differing elevations and therefore both portions will be sampled.

- Lower Level/Basement – Buildings 1 (Lower), 2 (Lower), 3, 4, 5, 6A (Lower), 18, 21, 24 (Lower), 33 (Lower), and 34 (Lower)
- Main Level/Level 1– Building 1 (Upper), Buildings 2 (Upper), 6A (Upper), 8, 9, 10, 11A, 21 (Upper), 24 (Upper), 33 (Upper), 34 (Upper)
- Upper Level/Level 2 – Buildings 13A, and 13B

Figure 3 shows the proposed locations of sub-slab soil vapor and indoor air samples to be collected in these buildings. As practical, locations will be selected in the field to ensure adequate spatial coverage. Given similar foundation construction and a lack of pressure inducing barriers (doors/walls) between the spaces, samples collected in Buildings 10, 9, 8, and 4 will be considered representative of the smaller building expansions which constitute Buildings 10A, 3A, 9A, 8A, and 4A, respectively (Figure 3). All samples will be collected over a 24-hour period. The proposed 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 each of the former manufacturing 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. 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, 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.

During the initial site visit, WSP will install permanent sub-slab soil vapor probes at the proposed sample locations in accordance with the procedures outlined below. To obtain representative samples, the probes will be allowed to equilibrate a minimum of 24 hours prior to sampling.

## SUB-SLAB VAPOR SAMPLING

Twenty-nine sub-slab soil vapor probes (Figure 3; SS-1 through SS-29) 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). 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 or 24 hours (depending upon anticipated building use), 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

Thirty indoor air samples (Figure 3) will be collected concurrently with the sub-slab soil vapor samples to evaluate the potential for vapor intrusion of VOCs into each building. On the first floor of Building 1, only an indoor air sample will be collected. This is due to the first floor's construction where the floor's northern and western exterior walls are approximately 11 feet below-grade but immediately beneath the floor is the basement. In addition, outdoor air sample(s) 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 locations 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, approximately 8 or 24 hours, 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 at the frequency of one per 20 samples or batch. 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. The laboratory will analyze the samples for VOCs (TCL42 list) using USEPA Method TO-15. 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 within 2 weeks of approval of work plan submittal to the NYSDEC and NYSDOH, pending laboratory canister availability. The sampling activities should take approximately 5 to 10 workdays to complete and are currently scheduled to begin on March 13, 2023. WSP anticipates submitting a report to the NYSDEC and NYSDOH summarizing the results of the vapor intrusion assessment approximately 8 to 10 weeks following receipt of the analytical results from the final sampling event. 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) 709-6500 with any questions or if you require additional information.

Kind regards,

Scott Haitz
Senior Vice President

DC :lkk :sph
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cc:\encl. Stephen L. Clarke, Emerson
Anthony Perretta, NYSDOH

# FIGURES

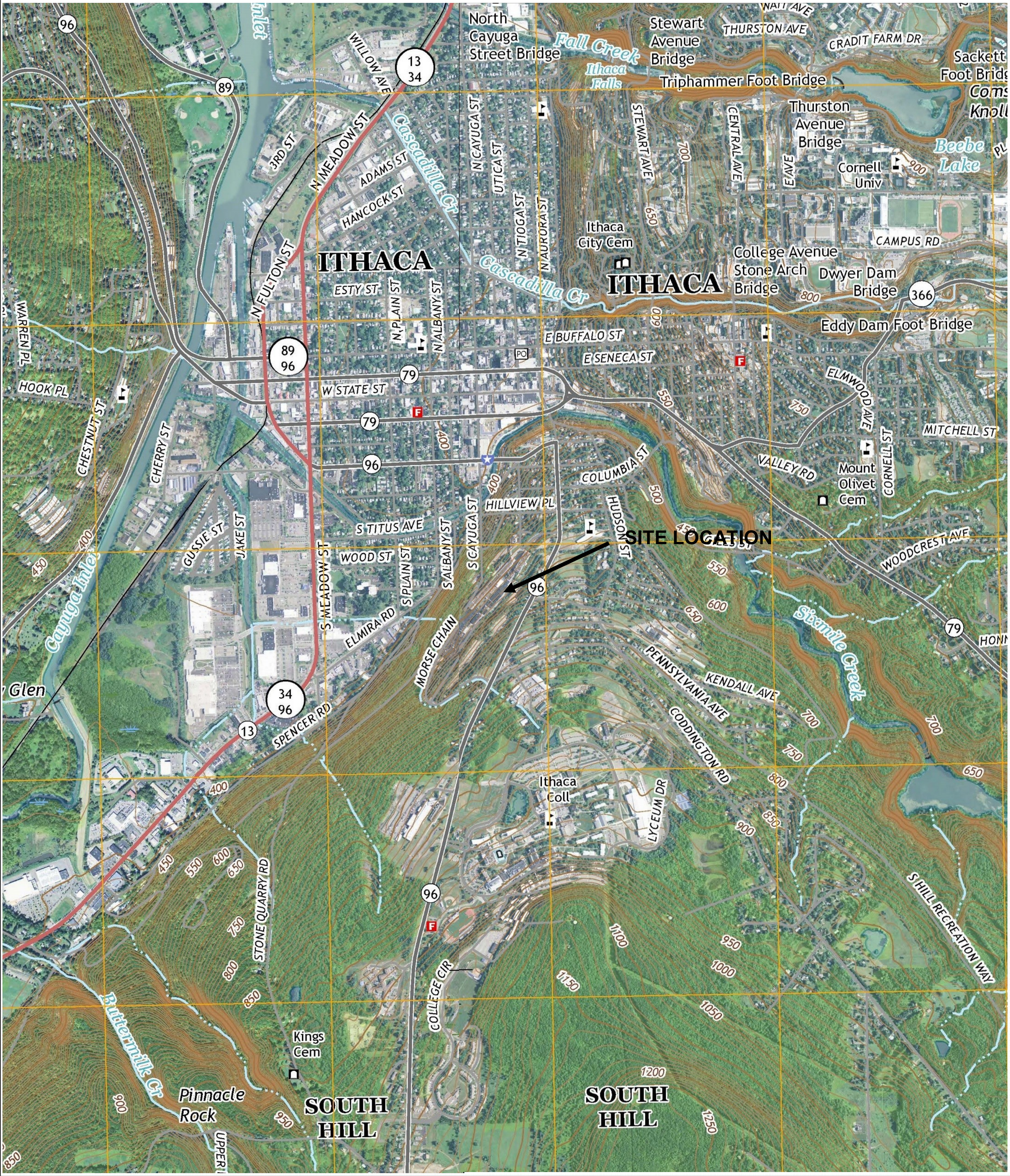
DWG Name: 314P1545.001_Figure 1-1_A01.pub

Checked:

Approved:

Drawn By: emk 03/14/19

A




REFERENCE:
7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE
ITHACA EAST AND WEST, NEW YORK 2016
SCALE 1:24,000


QUADRANGLE LOCATION

N

0 1000 2000 4000
SCALE, FEET


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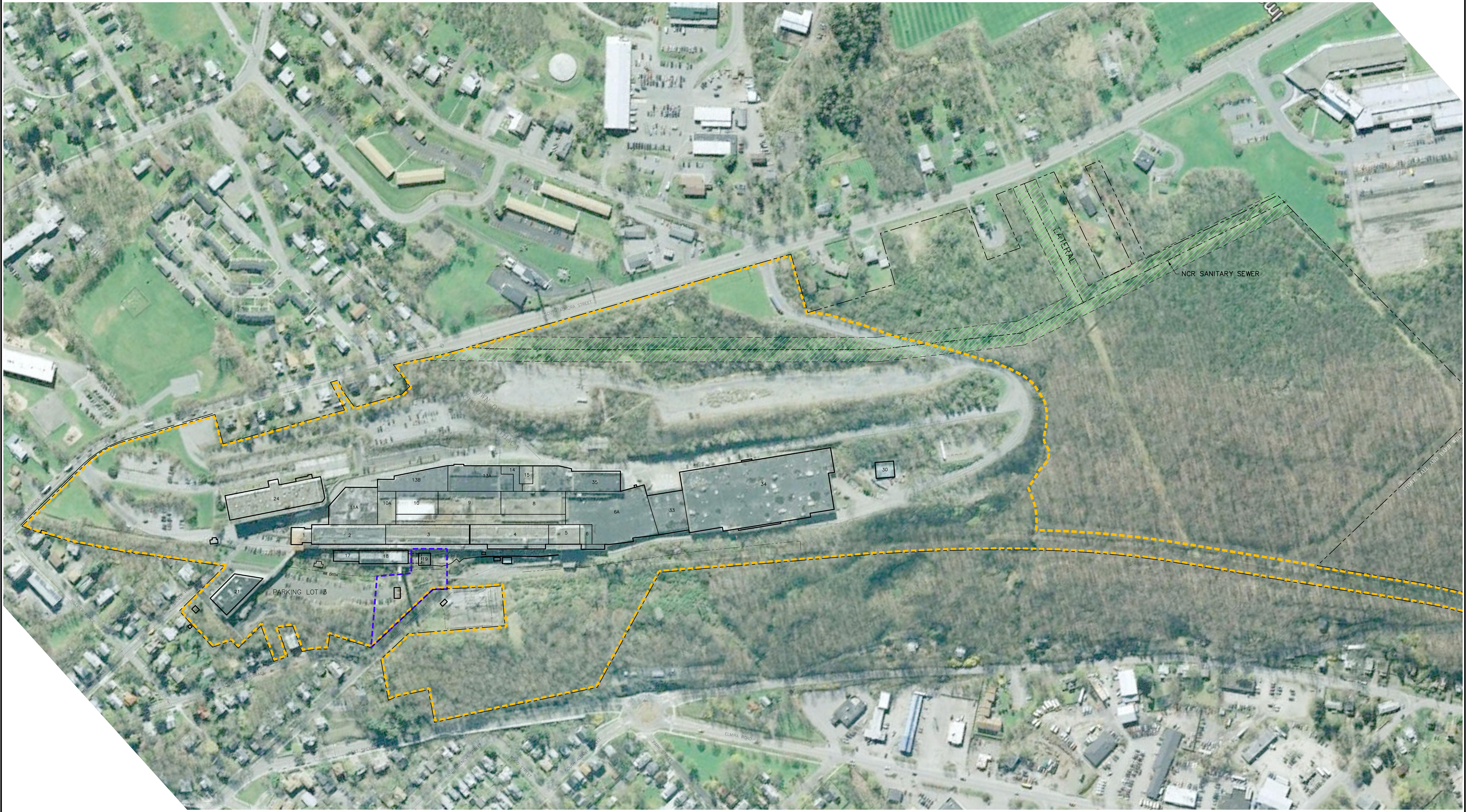
FIGURE 1

SITE LOCATION

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




LEGEND

| | |
|---|---|
| 34 | BUILDING NUMBER |
| | SANITARY SEWER |
| | PROPERTY LINE |
| | DEED RESTRICTION PLACED BY EMERSON |
| | BOUNDARY FOR OU-1 (RETAINED PROPERTY) |
| | BOUNDARY FOR OU-2 |

150 0 150 300
SCALE, FEET

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| REV | DESCRIPTION |
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| CHECKED | 09/01/2021 |
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# SITE LAYOUT

SITE MANAGEMENT PLAN
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON – ST. LOUIS, MISSOURI


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FIGURE 2

Drawing Number
314P1545.001–D132

## NYSDOH
## SOIL VAPOR / INDOOR AIR MATRICES
MAY 2017

MATRIX A: Trichloroethene (TCE), cis-1,2-Dichloroethene (cis-1,2-DCE), 1,1-Dichloroethene (1,1-DCE) Carbon Tetrachloride (CT)

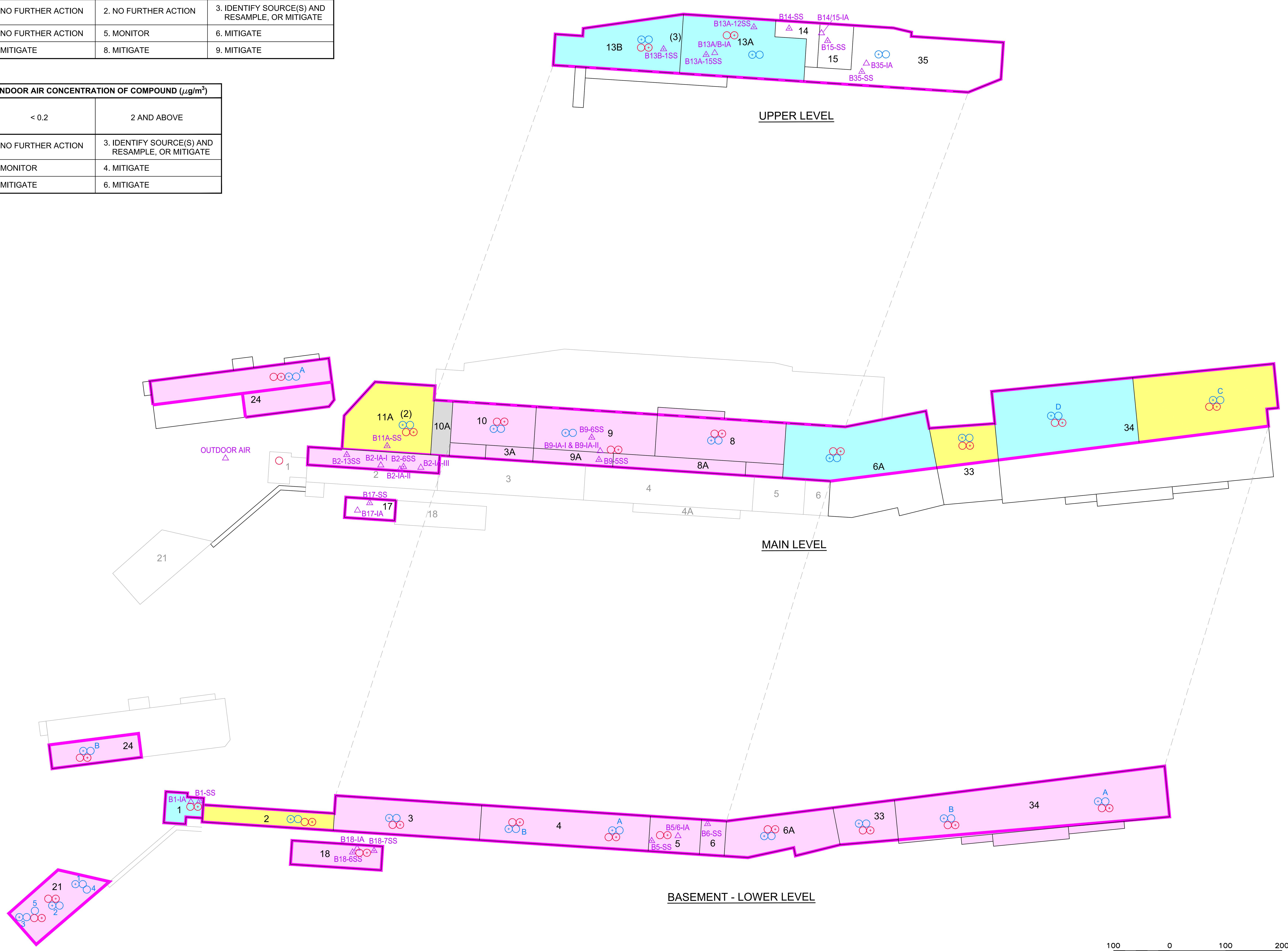
| | INDOOR AIR CONCENTRATION OF COMPOUND ($\mu g/m^3$) | | |
|---|---|---|---|
| **SUB-SOIL VAPOR CONCENTRATION OF COMPOUND (mcg/m$^3$)** | < 0.2 | 0.2 to < 1 | 1 AND ABOVE |
| < 6 | 1. NO FURTHER ACTION | 2. NO FURTHER ACTION | 3. IDENTIFY SOURCE(S) AND RESAMPLE, OR MITIGATE |
| 6 to < 60 | 4. NO FURTHER ACTION | 5. MONITOR | 6. MITIGATE |
| 60 AND ABOVE | 7. MITIGATE | 8. MITIGATE | 9. MITIGATE |

MATRIX B: Tetrachloroethene (PCE), 1,1,1-Trichloroethane (1,1,1-TCA), Methylene Chloride

| | INDOOR AIR CONCENTRATION OF COMPOUND ($\mu g/m^3$) | | |
|---|---|---|---|
| **SUB-SOIL VAPOR CONCENTRATION OF COMPOUND (mcg/m$^3$)** | < 3 | 3 to < 10 | 10 AND ABOVE |
| < 100 | 1. NO FURTHER ACTION | 2. NO FURTHER ACTION | 3. IDENTIFY SOURCE(S) AND RESAMPLE, OR MITIGATE |
| 100 to < 1,000 | 4. NO FURTHER ACTION | 5. MONITOR | 6. MITIGATE |
| 1,000 AND ABOVE | 7. MITIGATE | 8. MITIGATE | 9. MITIGATE |

MATRIX C: Vinyl Chloride

| | INDOOR AIR CONCENTRATION OF COMPOUND ($\mu g/m^3$) | |
|---|---|---|
| **SUB-SOIL VAPOR CONCENTRATION OF COMPOUND (mcg/m$^3$)** | < 0.2 | 2 AND ABOVE |
| < 6 | 1. NO FURTHER ACTION | 3. IDENTIFY SOURCE(S) AND RESAMPLE, OR MITIGATE |
| 6 to < 60 | 4. MONITOR | 4. MITIGATE |
| 60 AND ABOVE | 5. MITIGATE | 6. MITIGATE |

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LEGEND

- PROPOSED INDOOR AIR SAMPLE
- PROPOSED SUB-SLAB SOIL GAS SAMPLE
- WSP INDOOR AIR SAMPLE
- WSP SUB-SLAB SOIL GAS SAMPLE
- LABELLA INDOOR AIR SAMPLE
- LABELLA SUB-SLAB SOIL GAS SAMPLE
- 11A FACILITY BUILDING NUMBER
- SLAB ON GRADE
- NOT TESTED
- NO FURTHER ACTION
- IDENTIFY SOURCES AND RESAMPLE, OR MITIGATE
- MONITOR
- MITIGATE

NOTES:

1. POTENTIAL VAPOR MITIGATION HAS BEEN PRELIMINARILY IDENTIFIED FOR BUILDINGS 3, 4, 6A, 8, 10, 21, 24, 33, AND 34, DESPITE THE ABSENCE OF SUCH NEED PURSUANT TO THE MATRICES AT BUILDING 6A MAIN (IDENTIFY SOURCES AND RESAMPLE, OR MITIGATE), BUILDING 33 MAIN (MONITOR), AND BUILDING 34 MAIN (MONITOR). ADDITIONAL TESTING WILL BE UNDERTAKEN IN THESE AND OTHER BUILDINGS TO MORE THOROUGHLY CHARACTERIZE CONDITIONS PRIOR TO CONFIRMING THE NEED FOR AND DESIGN OF ANY MITIGATION SYSTEMS.

2. IN THE ABSENCE OF INDOOR AIR DATA WITH WHICH TO EVALUATE LABELLA'S SUB-SLAB SAMPLE RESULTS, THE HIGHEST CONSTITUENT CONCENTRATIONS REPORTED FOR INDOOR AIR SAMPLES COLLECTED IN BUILDING 2 WERE USED WITH THE MATRICES.

BUILDING 11A IS CURRENTLY SLATED FOR DEMOLITION AND SUBSEQUENT USE OF ITS FOOTPRINT FOR GREEN SPACE.

3. THE LABELLA DATA FOR BUILDING 13 SUGGEST THE NEED FOR "MONITORING". HOWEVER, THE WSP DATA FOR BUILDING 13A (WEST) INDICATE "NO FURTHER ACTION", WHILE DATA FOR BUILDING 13B (EAST) INDICATE THE NEED TO "MITIGATE". ADDITIONAL TESTING WILL BE PERFORMED IN THESE AREAS TO DETERMINE THE APPROPRIATE ACTION.

4. THE INDOOR AIR DATA FOR SAMPLES COLLECTED FROM LOCATIONS 4 AND 5 IN BUILDING 21 WERE USED IN CONJUNCTION WITH SUB-SLAB VAPOR DATA FOR LOCATIONS 1 AND 3.

DATA FOR INDOOR AIR SAMPLES COLLECTED FROM THE FIRST FLOOR ARE NOT PRESENTED BECAUSE THERE IS A BASEMENT ACROSS THE ENTIRE FOOTPRINT OF THE BUILDING.

| REV | DESCRIPTION |
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# SUB-SLAB AND INDOOR AIR (EXISTING CONDITIONS) AND PROPOSED SAMPLING LOCATIONS

FORMER EMERSON POWER TRANSMISSION SITE
ITHACA, NEW YORK

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI


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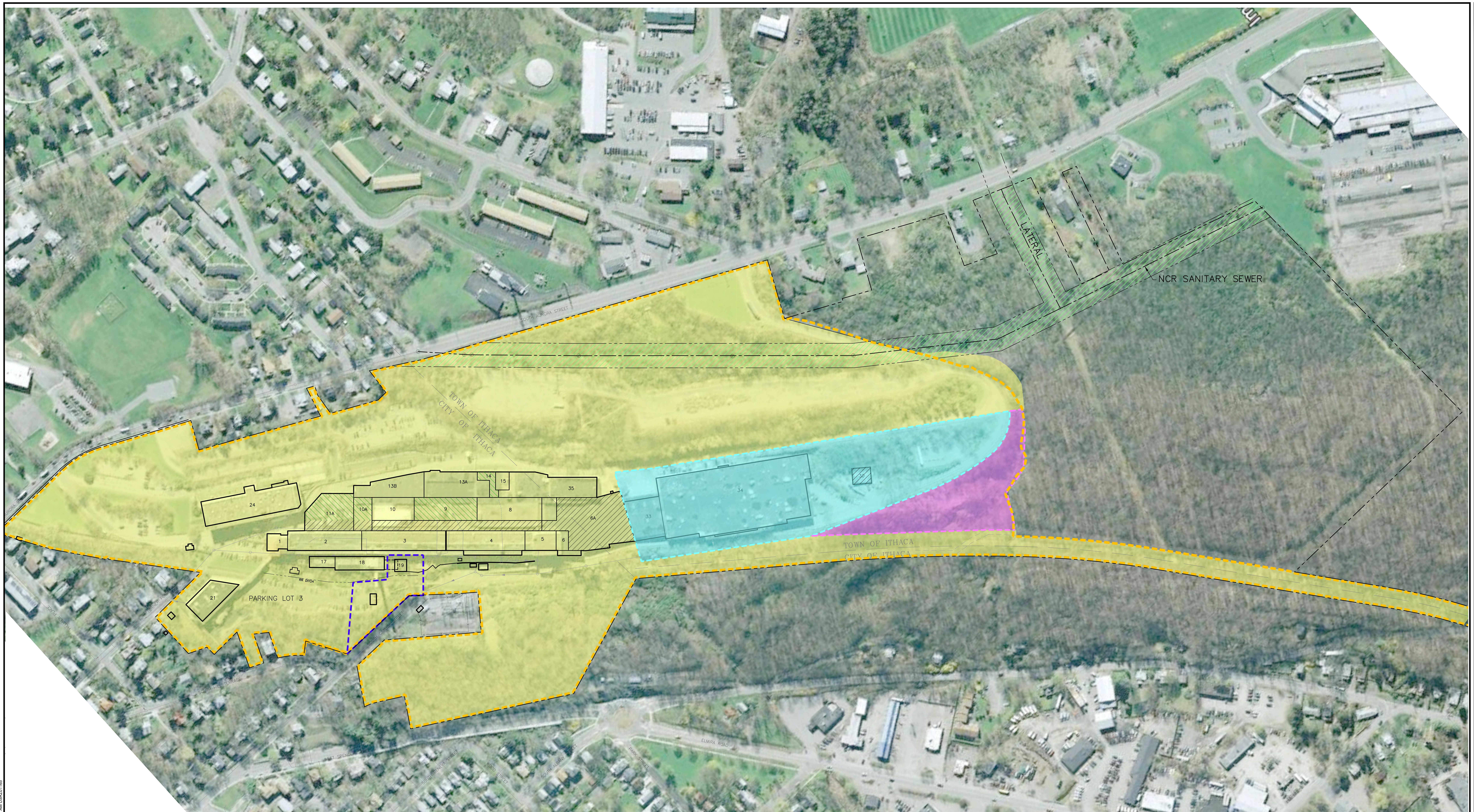
FIGURE 3

Drawing Number
314P5608.001-D07

D




LEGEND

- 34 BUILDING NUMBER
- EASEMENT FOR NCR SEWER
- SANITARY SEWER
- PROPERTY BOUNDARY
- BOUNDARY FOR OU–1 (RETAINED PROPERTY)
- BOUNDARY FOR OU–2

LEGEND

- AREA WHERE RESTRICTED RESIDENTIAL USE SOCs ARE APPLIED
- AREA WHERE COMMERCIAL USE SCOs ARE APPLIED
- AREA WHERE INDUSTRIAL USE SCOs ARE APPLIED
- PROPOSED DEMOLITION AREA FOR GREEN SPACE
- PROPOSED DEMOLITION AREA FOR ROADWAY/PARKING

150 0 150 300
SCALE, FEET

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# PROPOSED FUTURE USE

SITE MANAGEMENT PLAN
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON – ST. LOUIS, MISSOURI


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FIGURE 4

Drawing Number
314P5608.001–D15

# TABLES

**Table 1**

**Indoor Air and Soil Vapor Sample Results**
**Site Constituents of Concern**
**Former Emerson Power Transmission**
**Ithaca, New York (a)**

| **Building ID:** | **Building 1** | | **Building 2 (Lower Level/Basement)** | | **Building 2 (Main Level/Level 1)** | | | | | **Building 3** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **SS** | **IA** | **SS** | **IA** | **SS** | **SS** | **IA** | **IA** | **IA** | **IA** | **IA** | **SS** | **SS** | **IA** | **IA** | **IA** |
| **Date:** | **7/29/2013** | **7/29/2013** | **12/12/2005** | **12/12/2005** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **12/12/2005** | **12/12/2005** | **2/15/2006** | **2/15/2006** | **2/15/2006** | **12/19/2009** | **4/7/2010** |
| **Sample ID:** | **B1-SS** | **B1-IA** | **ETP2SSB** | **ETP2IAB** | **B2-6SS** | **B2-13SS** | **B2-IA-I** | **B2-IA-II** | **B2-IA-3** | **ETP3SSB** | **ETP3IAB** | **ETP3SSB** | **ETP3SSBR** | **ETP3IAB** | **ETP3IAB** | **ETP3IAB** |
| **VOCs (µg/m$^3$)** | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | - | - | 1.02 | 0.959 U | - | 0.96 U | 0.26 U | 0.45 | 0.26 U | 0.96 U | 0.58 J | 0.96 U | 0.96 U | 0.96 U | 0.87 | 0.52 |
| 1,1-Dichloroethene | 0.604 U | 0.60 U | 0.605 U | 0.605 U | 0.60 U | 0.60 U | 0.60 U | 0.604 U | 0.60 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.81 U | 0.16 U |
| cis-1,2-Dichloroethene | 3.8 | 2.30 | 0.604 U | 0.604 U | 1.6 | 0.60 U | 0.60 U | 2.0 | 0.85 | 2.94 | 1.45 | 2.98 C | 3.34 C | 1.09 CI | 0.63 | 0.20 |
| Methylene chloride | 0.53 U | 0.53 U | 3 | 13.1 | 3.3 | 0.53 U | 0.53 U | 0.53 U | 0.53 U | 1.3 | 2.4 | 1.3 | 1.6 | 0.5 U | 6.9 U | 2.8 UC |
| Tetrachloroethene | 1.0 U | 1.5 | 13.8 | 9.03 | 0.9 | 0.76 J | 1.0 U | 1.0 U | 1.0 U | 1200 D | 1200 D | 105 | 107 | 110 I | 1.1 | 0.75 |
| 1,1,1-Trichloroethane | 78 | 1.2 | 1.5 | 0.61 J | 4.7 | 1.4 | 0.83 U | 0.78 J | 1.2 | 25.00 | 2.05 | 51.00 | 55.50 | 0.72 JI | 0.40 U | 1.40 |
| Trichloroethene | 2.5 | 2.4 | 7.97 | 0.819 | 6.4 | 1.4 | 0.22 U | 2.3 | 2.1 | 92.3 | 5.84 | 86.3 | 94.5 | 3.88 I | 3.5 | 1.6 |
| Vinyl chloride | 0.39 U | 0.10 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.1 U | 0.10 U | 0.10 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.51 U | 0.20 U |

| **Building ID:** | **Building 3** | **Building 4** | | | | | | | | | | | | | **Building 5** | **Building 6** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **IA** | **SS** | **SS** | **SS** | **SS** | **IA** | **IA** | **IA** | **IA** | **IA** | **IA** | **IA** | **IA** | **IA** | **SS** | **SS** |
| **Date:** | **12/19/2009** | **12/12/2005** | **12/12/2005** | **2/15/2006** | **2/15/2006** | **12/12/2005** | **12/12/2005** | **2/15/2006** | **2/15/2006** | **12/19/2009** | **12/19/2009** | **4/2/2010** | **4/2/2010** | **4/2/2010** | **7/29/2013** | **7/29/2013** |
| **Sample ID:** | **ETP3IABR** | **EPT4ASSB** | **EPT4BSSB** | **EPT4ASSB** | **EPT4BSSB** | **EPT4AIAB** | **EPT4BIAB** | **EPT4AIAB** | **EPT4BIAB** | **EPT4AIAB** | **EPT4BIAB** | **EPT4AIAB** | **EPT4AIABR** | **EPT4BIAB** | **B5-2SS** | **B6-1SS** |
| **VOCs (µg/m$^3$)** | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 0.63 U | 0.959 U | 0.959 U | 0.64 J | 0.959 U | 0.959 J | 0.64 J | 0.64 J | 0.64 J | 0.53 | 0.62 | 0.5 | 0.39 | 0.45 | 0.96 U | 0.96 U |
| 1,1-Dichloroethene | 0.4 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.16 | 0.16 U | 0.16 U | 0.16 U | 0.16 U | 0.60 U | 0.60 U |
| cis-1,2-Dichloroethene | 0.56 | 1.17 I | 172 | 10.5 C | 91.5 C | 0.927 | 2.66 | 1.37 C | 1.33 C | 0.56 | 0.83 | 0.16 U | 0.16 U | 0.33 | 0.97 | 1.5 |
| Methylene chloride | 6.9 U | 1.69 I | 3.67 I | 0.742 | 1.48 | 2.01 | 2.58 | 3.43 | 0.953 | 2.8 U | 2.8 U | 2.8 UC | 2.8 UC | 2.8 UC | 0.46 | 0.53 U |
| Tetrachloroethene | 0.75 | 30.3 | 549 | 66.9 | 434 | 51 | 18.6 | 12.1 | 2.62 | 1.2 | 1.4 | 0.58 | 0.54 | 0.88 | 1.5 | 2.4 |
| 1,1,1-Trichloroethane | 0.60 | 2.22 I | 1.5 I | 1.61 | 1.83 | 4.55 | 0.832 U | 1.55 | 0.832 U | 0.71 | 0.87 | 1.3 | 1.0 | 4.8 | 1.2 | 31 |
| Trichloroethene | 2.5 | 11.1 I | 1400 D | 297 | 1620 | 7.54 | 12.8 | 5.35 | 7.92 | 4.7 | 8.6 | 0.75 | 0.64 | 4.7 | 22 | 32 |
| Vinyl chloride | 0.51 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.20 U | 0.20 U | 0.20 U | 0.20 U | 0.20 U | 0.39 U | 0.39 U |

| **Building ID:** | **Bldgs 5 & 6** | **Building 6A (Lower/Basement)** | | | | **Building 6A (Main/Level 1)** | | **Building 8** | | | | **Building 9** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **IA** | **SS** | **IA** | **IA** | **IA** | **SS** | **IA** | **SS** | **IA** | **IA** | **IA** | **SS** | **IA** | **SS** | **SS** | **IA** |
| **Date:** | **7/29/2013** | **12/12/2005** | **12/12/2005** | **12/19/2009** | **4/2/2010** | **12/12/2005** | **12/12/2005** | **12/12/2005** | **12/12/2005** | **12/19/2009** | **4/2/2010** | **12/12/2005** | **12/12/2005** | **7/29/2013** | **7/29/2013** | **7/29/2013** |
| **Sample ID:** | **B5/6-IA** | **EPT6ASSB** | **EPT6AIAB** | **EPT6AIAB** | **EPT6AIAB** | **EPT6ASSF** | **EPT6AIAF** | **EPT8SSB** | **EPT8IAF** | **EPT8IAF** | **EPT8IAF** | **EPT9SSF** | **EPT9IAF** | **B9-5SS** | **B9-6SS** | **B9-IA** |
| **VOCs (µg/m$^3$)** | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 0.26 | 1.41 | 0.5 | 0.45 | 0.50 | 1.41 C | 0.959 U | 0.959 UC | 0.49 | 0.49 | 0.41 | 0.959 UC | 0.959 U | 0.96 U | 0.96 U | 0.45 |
| 1,1-Dichloroethene | 0.60 U | 0.605 U | 0.605 U | 0.16 U | 0.16 U | 0.61 U | 0.605 U | 0.605 U | 0.605 U | 0.16 U | 0.16 U | 0.605 U | 0.605 U | 0.60 U | 0.60 U | 0.60 U |
| cis-1,2-Dichloroethene | 3.9 | 0.604 U | 0.604 U | 0.28 | 0.16 U | 0.6 U | 0.604 U | 0.604 U | 0.604 U | 0.16 U | 0.16 U | 0.604 U | 0.604 U | 0.60 U | 0.60 U | 0.60 U |
| Methylene chloride | 2.6 | 7.13 | 2.8 UC | 2.8 U | 2.8 UC | 2.9 | 2.15 | 3.57 | 3.85 | 2.8 U | 2.8 UC | 6.81 | 4.73 | 0.53 U | 0.53 U | 0.46 |
| Tetrachloroethene | 3.5 | 41.4 | 11.9 | 0.81 | 0.27 U | 4 | 8.76 | 1600 D | 4.21 | 0.66 | 0.65 | 71.7 | 2.41 | 1 | 0.83 | 1 U |
| 1,1,1-Trichloroethane | 6.2 | 10.9 | 2.9 | 2.9 | 0.50 | 8.32 | 5.38 | 78.8 | 2.61 | 1.4 | 0.35 | 43.8 | 0.721 J | 1.8 | 3.2 | 0.83 U |
| Trichloroethene | 80 | 116 | 1.26 | 2.1 | 0.21 U | 4.26 | 1.69 | 760 D | 1.37 | 0.86 | 0.39 | 84.1 | 0.437 | 18 | 1.5 | 0.66 |
| Vinyl chloride | 0.1 U | 0.39 U | 0.39 U | 0.20 U | 0.20 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.20 U | 0.20 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.1 U |

| **Building ID:** | **Building 9** | **Building 10** | | | | **Building 11A** | | | **Building 13** | | | | | | **Building 14** | **Building 15** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **IA** | **SS** | **IA** | **IA** | **IA** | **SS** | **IA** | **SS** | **SS** | **IA** | **SS** | **SS** | **SS** | **IA** | **SS** | **SS** |
| **Date:** | **7/29/2013** | **12/12/2005** | **12/12/2005** | **12/19/2009** | **4/2/2010** | **12/12/2005** | **12/12/2005** | **7/29/2013** | **12/12/2005** | **12/12/2005** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** |
| **Sample ID:** | **B9-IA-2** | **EPT10SSF** | **EPT10IAF** | **EPT10IAF** | **EPT10IAF** | **EPT11ASSF** | **EPT11AIAF** | **B11A-5SS** | **EPT13BSSF** | **EPT13BIAF** | **B13A-12SS** | **B13A-15SS** | **B13B-1SS** | **B13-A/B-IA** | **B14-5SS** | **B15-4SS** |
| **VOCs (µg/m$^3$)** | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 0.51 | 0.959 UC | 1.6 | 1.6 | 0.50 | 1.15 CI | 0.959 U | 0.64 J | 0.895 JCI | 0.959 U | 0.96 U | 0.96 U | 0.96 U | 0.51 | 0.53 U | 0.96 U |
| 1,1-Dichloroethene | 0.60 U | 0.605 U | 0.605 U | 0.16 U | 0.16 U | 0.605 U | 0.605 U | 0.60 U | 0.605 U | 0.605 U | 0.60 U | 0.60 U | 0.60 U | 0.60 U | 0.60 U | 0.60 U |
| cis-1,2-Dichloroethene | 0.73 | 0.604 U | 0.38 | 0.38 | 0.16 U | 2.62 I | 0.604 U | 0.60 U | 11.9 | 0.604 U | 0.60 U | 0.60 U | 0.60 U | 0.60 U | 0.60 U | 0.60 U |
| Methylene chloride | 0.53 U | 4.03 I | 2.65 | 2.8 U | 2.8 U | 3.14 I | 3.07 | 0.53 U | 12.4 | 3.39 | 0.53 U | 0.49 J | 0.53 U | 0.53 U | 0.53 U | 0.53 U |
| Tetrachloroethene | 0.97 | 550 D | 7.38 | 0.31 | 0.52 | 146 | 1.65 | 3.3 | 114 | 1.03 U | 1.2 | 1.0 U | 1.0 U | 0.76 J | 0.76 | 1.0 U |
| 1,1,1-Trichloroethane | 1.1 | 680 D | 0.93 | 0.93 | 0.28 | 43.3 | 0.555 J | 26 | 3.66 I | 0.832 U | 0.83 U | 2.6 | 3.3 | 0.83 U | 1.4 | 0.83 U |
| Trichloroethene | 4.2 | 1000 D | 0.81 | 0.81 | 0.26 | 41.5 | 0.492 | 1.4 | 61.2 | 0.218 U | 1.2 | 27 | 1.7 | 0.55 | 1.4 | 1.4 |
| Vinyl chloride | 0.1 U | 0.39 U | 0.39 U | 0.20 U | 0.20 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.1 U | 0.39 U | 0.39 U |

**Table 1**

**Indoor Air and Soil Vapor Sample Results**
**Site Constituents of Concern**
**Former Emerson Power Transmission**
**Ithaca, New York (a)**

| **Building ID:** | **Bldgs 14 & 15** | **Building 17** | | **Building 18** | | | **Building 21** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **IA** | **SS** | **IA** | **SS** | **SS** | **IA** | **SS** | **SS** | **SS** | **SS** | **IA** | **IA** | **IA** | **IA** | **IA** | **IA** |
| **Date:** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **7/29/2013** | **9/22/2005** | **9/22/2005** | **9/22/2005** | **9/22/2005** | **9/22/2005** | **9/22/2005** | **9/22/2005** | **9/22/2005** | **1/17/2006** | **1/17/2006** |
| **Sample ID:** | **B14/15-IA** | **B17-2SS** | **B17-IA** | **B18-6SS** | **B18-7SS** | **B18-IA** | **RD1SS** | **RD2SS** | **RD3SS** | **RD3SSR** | **RD1IAB** | **RD2IAB** | **RD2IABR** | **RD3IAB** | **RD4IAB** | **RD5IAB** |
| **VOCs (µg/m³)** | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 0.45 | 0.96 U | 0.45 | 0.96 U | 0.96 U | 0.51 | 0.767 JC | 0.767 C | 1.34 | 1.09 | 0.767 JC | 0.959 UC | 0.959 U | 0.959 UC | 0.703 JC | 0.703 JC |
| 1,1-Dichloroethene | 0.60 U | 0.604 U | 0.60 U | 0.60 U | 0.60 U | 0.604 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U |
| cis-1,2-Dichloroethene | 0.60 U | 0.64 | 0.48 | 7.5 | 8.2 | 7.9 | 4.15 | 0.604 U | 0.604 U | 0.604 U | 0.604 U | 0.604 U | 0.604 U | 0.604 U | 0.967 | 0.604 U |
| Methylene chloride | 0.53 U | 0.53 U | 0.53 U | 0.53 U | 0.53 U | 0.53 U | 0.53 U | 0.918 | 1.06 | 0.847 | 24.2 | 2.37 | 2.01 | 1.31 | 0.989 | 1.52 |
| Tetrachloroethene | 1.0 U | 1.0 U | 1.0 U | 0.76 J | 1.0 U | 7.4 | 8.41 | 4.48 | 44.8 | 16.5 | 1.45 | 1.45 | 1.38 | 2.83 | 0.965 J | 1.03 J |
| 1,1,1-Trichloroethane | 0.83 U | 0.83 U | 0.83 U | 0.83 U | 0.83 U | 0.83 U | 1.5 C | 0.943 C | 2.11 | 1.33 | 0.998 C | 0.666 JC | 0.666 JC | 0.943 C | 0.832 U | 0.832 U |
| Trichloroethene | 0.44 | 2.3 | 0.82 | 4.4 | 5.0 | 5.4 | 13.7 | 4.21 | 7.21 | 3.93 | 1.42 | 1.97 | 1.31 | 1.31 | 0.819 | 0.437 |
| Vinyl chloride | 0.1 U | 0.39 U | 0.1 U | 1.7 | 2.2 | 1.5 | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U |

| **Building ID:** | **Building 21** | | | **Building 24 (Lower/Basement)** | | | | | | **Building 24 (Main/Level 1)** | | | | | | **Building 33** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **IA** | **IA** | **SS** | **IA** | **IA** | **IA** | **IA** | **IA** | **IA** | **SS** | **IA** | **SS** | **IA** | **IA** | **IA** | **SS** |
| **Date:** | **1/17/2006** | **1/17/2006** | **12/12/2005** | **12/12/2005** | **12/12/2005** | **2/15/2006** | **2/15/2006** | **12/19/2009** | **4/2/2010** | **12/12/2005** | **12/12/2005** | **2/15/2006** | **2/15/2006** | **12/19/2009** | **4/20/2010** | **12/12/2005** |
| **Sample ID:** | **RD1IAF** | **RD2IAF** | **EPT24BSSB** | **EPT24BIAB** | **EPT24BIABR** | **EPT24BSSB** | **EPT24BIAB** | **EPT24BIAB** | **EPT24BIAB** | **EPT24ASSF** | **EPT24AIAF** | **EPT24ASSF** | **EPT24AIAF** | **EPT24AIAF** | **EPT24AIAF** | **EPT33SSB** |
| **VOCs (µg/m³)** | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 0.959 UC | 0.959 UC | 1.28 | 0.831 J | 0.959 U | 0.576 J | 0.831 J | 0.52 | 0.44 | 0.959 UC | 0.959 U | 0.959 U | 0.831 J | 1.4 | 0.50 | 0.959 U |
| 1,1-Dichloroethene | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.16 U | 0.16 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.16 U | 0.16 U | 0.605 U |
| cis-1,2-Dichloroethene | 0.604 U | 0.604 U | 0.604 U | 0.604 UC | 0.604 U | 0.604 UC | 0.604 UC | 0.16 U | 0.16 | 1.69 I | 1.01 | 1.61 C | 0.604 UC | 0.48 | 0.16 U | 0.604 U |
| Methylene chloride | 0.636 | 1.38 | 4.63 | 67.1 | 5.33 | 0.989 | 1.48 | 2.8 U | 2.8 U | 5.44 I | 2.37 | 0.53 U | 1.02 | 2.8 U | 2.8 U | 4.45 |
| Tetrachloroethene | 1.03 J | 0.965 J | 2.96 | 2.28 | 0.827 J | 2.28 | 1.93 | 0.27 U | 0.27 U | 73.8 | 0.965 J | 46.2 | 1.03 U | 0.27 U | 0.27 U | 53.8 |
| 1,1,1-Trichloroethane | 0.61 J | 0.721 J | 0.61 J | 0.832 U | 0.832 U | 0.832 U | 0.832 U | 0.22 U | 0.22 U | 11.8 | 0.832 J | 2.5 | 0.832 U | 0.32 | 0.22 U | 5.99 |
| Trichloroethene | 0.601 | 0.765 | 19.7 | 5.63 | 5.63 | 15.2 | 1.31 | 0.24 | 0.41 | 770 D | 7.81 | 236 | 4.1 | 2.1 | 0.45 | 20.8 |
| Vinyl chloride | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.20 U | 0.20 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.20 U | 0.20 U | 0.39 U |

| **Building ID:** | **Building 33 (Lower/Basement)** | | | **Building 33 (Main/Level 1)** | | | | **Building 34 (Lower/Basement)** | | | | | | | | **Building 34** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **IA** | **SS** | **IA** | **EPT33SSF** | **IA** | **IA** | **IA** | **SS** | **SS** | **IA** | **IA** | **IA** | **IA** | **IA** | **IA** | **SS** |
| **Date:** | **12/12/2005** | **2/15/2006** | **2/15/2006** | **12/12/2005** | **12/12/2005** | **12/19/2009** | **4/2/2010** | **12/12/2005** | **12/12/2005** | **12/12/2005** | **12/12/2005** | **12/19/2009** | **12/19/2009** | **4/2/2010** | **4/2/2010** | **12/12/2005** |
| **Sample ID:** | **EPT33IAB** | **EPT33SSBA** | **EPT33IAB** | **EPT33SSF** | **EPT33IAF** | **EPT33IAF** | **EPT33IAF** | **EPT34ASSB** | **EPT34BSSB** | **EPT34ASSB** | **EPT34AIAB** | **EPT34AIAB** | **EPT34BIAB** | **EPT34AIAB** | **EPT34BIAB** | **EPT34CSSF** |
| **VOCs (µg/m³)** | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 0.959 U | 0.959 U | 0.959 U | 0.96 UC | 0.96 U | 1.3 U | 0.54 | 0.959 U | 1.22 | 0.959 U | 0.959 U | 1.3 U | 1.3 U | 0.45 | 0.45 | 0.895 J |
| 1,1-Dichloroethene | 0.605 U | 0.605 U | 0.605 U | 0.61 U | 0.61 U | 1.6 U | 0.16 U | 0.605 U | 0.605 U | 0.605 U | 0.605 U | 0.79 U | 0.79 U | 0.16 U | 0.16 U | 0.605 U |
| cis-1,2-Dichloroethene | 0.604 U | 0.604 UC | 0.604 UC | 0.6 U | 0.6 U | ` U | 0.16 U | 2.34 | 6.73 | 0.604 U | 0.604 U | 0.79 U | 0.79 U | 0.16 U | 0.16 U | 0.604 U |
| Methylene chloride | 2.9 | 0.53 U | 0.812 I | 2.44 | 2.51 | 1.7 U | 2.8 UC | 3.46 | 3.95 | 3.5 | 2.4 | 1.7 U | 1.7 U | 2.8 UC | 2.8 UC | 3.35 |
| Tetrachloroethene | 0.689 J | 114 | 1.31 I | 60 | 4.41 | 1.4 U | 0.27 U | 1700 D | 215 | 0.689 J | 0.689 J | 1.4 U | 1.4 U | 0.27 U | 0.27 U | 74.5 |
| 1,1,1-Trichloroethane | 0.832 U | 2.88 | 0.832 U | 15 | 0.83 U | 1.1 U | 0.22 U | 21.6 | 55.5 | 0.832 U | 0.832 U | 1.1 U | 1.1 U | 0.22 U | 0.22 U | 12.2 J |
| Trichloroethene | 8.52 | 20.8 | 0.819 I | 6.28 | 0.44 | 0.81 J | 0.21 U | 249 | 3800 D | 1.37 | 1.47 | 1.1 U | 1 U | 0.21 U | 0.21 U | 51.3 |
| Vinyl chloride | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.51 U | 0.2 U | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.51 U | 0.51 U | 0.2 U | 0.2 U | 0.39 U |

| **Building ID:** | **Building 34 (Main/Level 1)** | | | **Building 35** | | **Outdoor Air** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Type/Media:** | **SS** | **IA** | **IA** | **SS** | **IA** | **OA** | **OA** | **OA** | **OA** | **OA** | **OA** | **OA** | **OA** | **OA** |
| **Date:** | **12/12/2005** | **12/12/2005** | **12/12/2005** | **7/29/2013** | **7/29/2013** | **12/12/2015** | **2/15/2006** | **12/19/2009** | **4/2/2010** | **12/19/2009** | **4/2/2010** | **9/22/2005** | **9/22/2005** | **1/17/2006** |
| **Sample ID:** | **EPT34DSSF** | **EPT34CIAF** | **EPT34DIAF** | **B35-6SS** | **B35-IA** | **EPT1AA** | **EPT1AA** | **EPT1AA** | **EPT1AA** | **EPT2AA** | **EPT2AA** | **RD1AA** | **RD1AA** | **RD1AA** |
| **VOCs (µg/m³)** | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 0.959 UC | 0.959 U | 0.959 U | 0.96 U | 0.45 | 0.77 J | 0.96 U | 0.60 | 0.48 | 1.8 | 0.49 | 0.895 J | 0.895 J | 0.767 JC |
| 1,1-Dichloroethene | 0.605 U | 0.605 U | 0.605 U | 0.60 U | 0.60 U | 0.605 U | 0.605 U | 0.16 U | 0.16 U | 0.16 U | 0.16 U | 0.605 U | 0.605 U | 0.605 U |
| cis-1,2-Dichloroethene | 0.604 U | 0.604 U | 0.604 U | 0.44 J | 0.60 U | 0.604 U | 0.604 UC | 0.16 U | 0.16 U | 0.16 U | 0.16 U | 0.604 U | 0.604 U | 0.604 U |
| Methylene chloride | 5.37 | 3.71 | 3.21 | 1.4 | 0.53 U | 3.71 | 0.53 U | 2.8 U | 2.8 U | 2.8 U | 2.8 U | 0.503 U | 0.503 U | 0.636 |
| Tetrachloroethene | 14.8 | 0.689 J | 1.03 U | 1.3 | 1.0 U | 0.552 J | 0.827 J | 0.27 U | 0.27 U | 0.27 U | 0.27 U | 1.03 U | 1.03 U | 0.689 J |
| 1,1,1-Trichloroethane | 1.5 | 0.832 U | 0.832 U | 4.7 | 0.83 U | 0.832 U | 0.832 U | 0.22 U | 0.22 U | 0.22 U | 0.22 U | 0.832 U | 0.832 U | 0.832 U |
| Trichloroethene | 5.08 | 0.328 | 2.46 | 2.2 | 0.60 | 0.819 | 1.09 | 0.21 U | 0.26 | 0.21 U | 0.29 | 0.546 | 0.218 U | 0.218 U |
| Vinyl chloride | 0.39 U | 0.39 U | 0.39 U | 0.39 U | 0.1 U | 0.39 U | 0.39 U | 0.20 U | 0.20 U | 0.2 U | 0.2 U | 0.390 U | 0.390 U | 0.390 U |

a/ VOCs = volatile organic substances; µg/m³ = micrograms per cubic meter; "-" = not analyzed; IA = indoor air sample; SS = sub-slab vapor sample; NYSDOH = New York State Department of Health.
b/ NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October 2006, updated May 2017.
c/ Data qualifiers:
U = not detected
J = analyte detected below the reporting limit, but above the method detection limit; estimated value
D = results from secondary dilution
C = analyte exceeds calibration criteria; estimated value
I = associated internal standard criteria not met; estimated value

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 |
|---|---|---|---|---|---|---|
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* 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

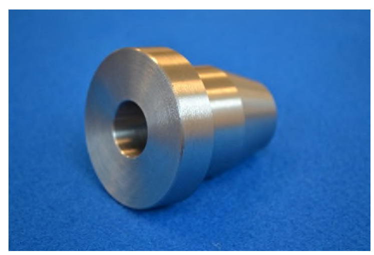

Figure 2

## 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®!