



ENVIRONMENTAL STRATEGIES CONSULTING LLC

11911 Freedom Drive, Suite 900 • Reston, Virginia 20190 • (703) 709-6500 • Fax (703) 709-8505

March 11, 2005

Mr. Tom Elter
New York State Department of Environmental Conservation
Division of Environmental Remediation – Region 7
615 Erie Boulevard, West
Syracuse, NY 13204-2400

Re: Stationary Source Emission Measurement Protocol
Emerson Power Transmission Facility, Ithaca, New York

Dear Tom:

Environmental Strategies Consulting LLC, on behalf of Emerson Electric Co. and Emerson Power Transmission (EPT), has prepared the enclosed protocol to measure the volatile organic compound (VOC) emissions related to the operation of a sub-slab depressurization system at 126 South Hill Terrace in Ithaca, New York. At the request of the New York State Department of Environmental Conservation (NYSDEC), the emissions concentrations will then be used to evaluate the potential affect on ambient air quality on a compound by compound basis using the NYSDEC's DAR-1 model. The proposed emissions measurement protocol is presented in Enclosure A. A floor plan sketch of the soil vapor mitigation system and a photograph of the exterior blower and exhaust stack are presented in Enclosure B. Copies of the U.S. Environmental Protection Agency Test Methods referenced in the proposed protocol are presented in Enclosure C.

Environmental Strategies anticipates collecting the emissions samples during the week of March 21, 2005. Please provide us with your comments before March 18, 2005, if possible, so that the sampling can be conducted as scheduled.

Sincerely yours,

Brian Silfer
Senior Project Manager

BES:lrp

k:/client/emerson/ithaca/final cover letter.doc

Enclosures

cc/encl.: Derek Chase, Emerson

For Reference

Not to be taken from this room

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**Stationary Source Emission Measurement Protocol
Sub-Slab Depressurization System
126 South Hill Terrace
Ithaca, New York**

Objective

The objective of the emission measurements is to quantify the rate of volatile organic compound (VOC) emissions related to the operation of a sub-slab depressurization system located at 126 South Hill Terrace in Ithaca, New York. This system captures soil vapor from below the structure.

Overview

Direct sampling of emissions from the sub-slab depressurization system will be performed utilizing U.S. Environmental Protection Agency (EPA) Reference Methods for measurement of emissions of VOC sources. This approach includes the placement of a sampling probe within the exhaust stream in a capture device or stack. Using EPA Method 18, samples are collected in a Tedlar bag that are then analyzed using gas chromatography (GC).

Sampling Methodologies

The general sampling methodologies incorporated in this sampling event involve the collection of VOCs in a Tedlar bag. The specific methods are presented below, with additional information provided in Enclosure A:

- EPA Method 18 – Measurement of Gaseous Organic Compound Emissions By Gas Chromatography
- EPA Method 1 – Sample and Velocity Traverses for Stationary Sources

For EPA Method 18, samples will be evacuated directly into the Tedlar bag without the use of the intermediate rigid air-tight container as specified in section 8.2.1 of the method. For EPA Method 1, a thermal anemometer and hygrometer will be used in lieu of a standard pitot tube or similar devices. These minor modifications will not affect the overall quality or reproducibility of the emission measurements. Copies of EPA Methods 1 and 18 are presented in Enclosure B.

Constituents of Concern

The sub-slab depressurization system was designed to address specific compounds that may be present in the vapor phase beneath the structure at 126 South Hill Terrace. Consequently, this emission measurement protocol addresses only the following constituents:

- 1,1,1-Trichloroethane
- 1,2-Dichloroethane
- cis-1,2-Dichloroethene
- Methylene chloride
- Tetrachloroethylene
- Trans-1,2-Dichloroethene
- Trichloroethene
- Vinyl chloride

These eight compounds were identified by the New York State Department of Environmental Conservation (NYSDEC) as potential constituents of concern at the nearby Emerson Power Transmission (EPT) facility.

Apparatus

The following apparatus will be used to sample the emissions from the mitigation system:

- Probe, stainless steel
- Connections, stainless steel
- Sampling lines, Teflon
- Universal flow sample pump, SKC 224-PCXR8
- Thermal anemometer, TSI or equivalent
- Hygrometer, Protimeter or equivalent
- Air flow calibrator, Bios Dry-Cal DC-Lite or equivalent
- Tedlar bags, 3-liter or 1-liter

General Procedures

1. All sample pumps will be charged the evening before the sampling event to ensure a full battery charge is available.
2. All Tedlar bags will be received from the laboratory or manufacturer as fully purged or certified clean.
3. Sampling port must be installed at least eight stack diameters downstream and two stack diameters upstream from any flow disturbance, such as a bend, expansion, or contraction in the stack. For this application, the sampling port may be installed on the primary vertical riser outside the residence (Method 1, Section 11.0).
4. Determine appropriate number of traverses based on diameter size for non-particulate gas stream (Method 1, Section 11.2.2 and Figure 1-2).
5. Calibrate sampling pumps to approximately 1.0 liter per minute.
6. Assemble sampling train, as specified in Method 18 (Figure 18-9), checking for leaks.
7. Sampling will be performed in the morning and afternoon to account for potential diurnal changes that may affect the quantity and character of emissions. Morning

shift samples will be collected between 8:00 and 11:00 AM; evening samples will be collected between 1:00 and 5:00 PM.

8. Insert thermal anemometer probe at designated traverses in the stack and measure and record velocity, temperature, and relative humidity. Ensure proper orientation of anemometer face relative to the gas stream flow prior to insertion into stack.
9. Insert hygrometer probe at designated traverses in the stack and measure and record dew point, relative humidity, and temperature. Ensure proper orientation of hygrometer face relative to the gas stream flow prior to insertion into stack.
10. Place the sampling probe at the center of the stack, mark location on probe.
11. Connect a calibration bag to the sampling train and perform a test run of sampling, checking for leaks.
12. Sampling will be performed in triplicate. Connect the first run Tedlar sampling bag. Evacuate sample from exhaust gas stream into Tedlar bag, ensuring that final bag volume is approximately 80 percent of the bag capacity. Record required sampling data (Method 18, Figure 18-10).
13. Perform second and third sampling runs consecutively, as specified above.
14. Protect Tedlar bag samples by placing each bag in a rigid container, such as a plastic cooler.
15. Following triplicate sample collection, repeat stack parameter characteristic measurements specified in steps 8 and 9.
16. Conduct morning and afternoon sampling, ensuring that pre- and post-stack parameter characteristic measurements and triplicate samples are collected during each shift.
17. Properly label, manifest, and package samples for shipment.
18. Refer to Methods 1 and 18 for additional details of any aspect of sampling not directly specified in these general procedures.

Appendices

EPA Method 18 – Measurement of Gaseous Organic Compound Emissions By Gas Chromatography

EPA Method 1 – Sample and Velocity Traverses for Stationary Sources

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