Environmental Resources Management

5788 Widewaters Parkway
Syracuse, New York 13214
315-445-2554
315-445-2543 (fax)

7 February 2017

John P. McAuliffe, P.E.
Program Director
Honeywell
301 Plainfield Road
Suite 330
Syracuse, New York 13212

RE: Vapor Intrusion Evaluation Work Plan
Former Oak Materials Fluorglas Division - John Street
Village of Hoosick Falls, Rensselaer County, New York
NYSDEC Site Number 442049

Dear Mr. McAuliffe:

This letter outlines the elements of a vapor intrusion (VI) evaluation at several residential and commercial structures in the vicinity of the Former Oak Materials Fluorglas Division - John Street (former John Street facility). The VI evaluation will be performed under the Order on Consent and Administrative Settlement Index Number CO 4-20160415-79 (the Order).

BACKGROUND

During the Site Characterization, groundwater samples were collected from ten locations on and in the vicinity of the former John Street facility property using the Waterloo Advanced Profiler System (APS). The groundwater samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260 as outlined in the New York State Department of Environmental Conservation (NYSDEC)-approved Final Site Characterization Field Sampling and Analysis Plan (FSAP; ERM, 2016).

Eight VOCs, including trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), tetrachloroethene (PCE), vinyl chloride (VC) and toluene were detected in one or more groundwater samples. Concentrations of five VOCs (TCE, 1,1,1-TCA, 1,1-DCE, 1,1-DCA and cis-1,2-DCE) exceed their respective New York State Class GA standards. The locations of the ten APS groundwater sampling locations and corresponding VOC concentrations reported in the samples are shown on Figure 1.

SCOPE OF WORK

Based on these groundwater results, ERM proposes to conduct a VI evaluation at selected occupied buildings in accordance with NYSDOH's VI guidance (NYSDOH, 2006).

Access Agreements

Prior to initiating sampling, ERM, in consultation with NYSDEC and the New York State Department of Health (NYSDOH), will contact property owners and/or occupants to obtain access. Access will be confirmed prior to the start of sampling through the use (and resident signature) of an access agreement, which is currently in use for all sampling in the Village of Hoosick Falls and the Town of Hoosick.

ERM will provide NYSDEC with at least five business days prior notice before mobilizing to the property to conduct the sampling, absent an agreement otherwise with NYSDEC.

Pre-Sampling Building Inspection

Prior to conducting a VI sampling event, a pre-sampling building inspection will be performed to assess building construction, the presence of a basement or crawl space, and to inventory products or chemicals used and/or stored on the property, consistent with the NYSDOH's VI guidance (NYSDOH, 2006). During the inspection, ERM will complete a building questionnaire consistent with the NYSDOH VI guidance. For multiple-family residential structures, each portion of the building will be evaluated and sampled separately. Appropriate and accessible sampling locations for both indoor air samples and co-located sub-slab vapor samples will be evaluated and identified during this inspection.

Subsurface Utility Evaluation

A private utility location contractor will scan, identify, locate, and mark potential subsurface utilities at sample locations. To the extent practicable, samples will be located in areas that are at least 10 feet away from underground utilities and in areas not subject to drafts from overhead heating, ventilation, or air conditioning equipment.

Sample Collection

The following environmental and building factors that may affect VI will be evaluated during sample collection:

- Soil conditions (color, texture, composition, moisture)
- Surface confining conditions (e.g., frost, pavement, etc.)
- Underground conduits/basement penetrations
- Weather conditions
- Operation of heating, ventilation, and air conditioning equipment
- Foundation type
- Foundation integrity

Co-located and concurrent sub-slab vapor and indoor air samples will be collected from the lowest level of the building over a 24-hour sampling period, as described below.

Air Sampling

Air samples will be collected in laboratory-certified clean 2.7-liter or 6-liter SUMMA® canisters with a calibrated flow controller. SUMMA® canisters utilized for indoor and outdoor air samples shall be individually certified by the project laboratory. The indoor air samples will be collected with the sample inlet of the canister positioned approximately 3- to 5-feet above the floor surface to represent the "breathing zone." The SUMMA® canisters will be retrieved approximately 24-hours after initiation of sample collection.

An outdoor ambient air sample will be collected over the same 24-hour period at a location upwind of the building. This sample inlet will also be located approximately 5-feet above the ground surface. One blind duplicate sample will also be collected for quality control purposes. A calibrated photoionization detector (PID) equipped with an 11.7 eV lamp will be used to screen for VOCs at each sample location.

The vacuum on the SUMMA® canister flow controller will be recorded at the start and completion of the sampling period. Following the sampling event, the canister's valve will be closed and the Swagelok®-type nut will be placed over the inlet and secured. The vacuum will be recorded on the chain of custody to demonstrate that the seal on the canister has not been compromised during transit to the project laboratory.

Sub-Slab Sampling in Buildings with a Concrete Floor Slab

All sub-slab vapor points will be installed prior to performing any indoor air sampling. An electric hammer drill will be used at each sub-slab sampling location to drill a 1.5-inch diameter hole approximately 1.75-inches into the concrete slab for installation of a drilling guide and secure cover. The borehole will be further advanced using a 5/8-inch drill bit to a depth approximately 1-inch beneath the slab to create an adequate space from which to collect a vapor sample. A stainless steel vapor pin will be installed into the borehole and sealed.

A calibrated PID will be used to measure VOCs in sub-slab vapor through each of the vapor pins. A helium tracer test will be performed to test the integrity of the seal of the vapor pins.

Consistent with the indoor and ambient air samples, sub-slab soil gas samples will be collected in laboratory-certified clean 2.7-liter or 6-liter SUMMA® canisters with a calibrated flow controller. SUMMA® canisters utilized for sub-slab vapor or soil vapor samples shall be batch certified by the project laboratory. The SUMMA® canisters will be retrieved approximately 24-hours after initiation of sample collection.

After it is determined that additional sampling is not required, each of the vapor pins will be removed from the concrete slab and the boreholes will be sealed with a non-shrinking concrete grout or epoxy flush with the pre-existing surface.

"Sub-Slab" Sampling in Buildings with an Earthen Floor

If a building is determined to not have a concrete slab, ERM will instead collect soil vapor samples. Soil vapor samples will be collected at a depth of approximately 2- to 3-feet below ground surface or a minimum of 1-foot above groundwater. Stainless steel rods equipped with a detachable stainless steel sampling point will be driven to the sampling depth. Dedicated Nylaflow® tubing will be attached to each sampling point. Boreholes will be backfilled with glass beads to a minimum of 6 inches above the soil vapor sampling point. The remainder of the annular space will be filled with bentonite chips and immediately hydrated with water. Soil vapor sampling points will set for a minimum of 24-hours after installation and prior to sampling.

The sampling point and tubing will be purged prior to sampling. An enclosed container will be placed over each soil vapor sampling point to create a seal. A helium tracer gas test will be performed to confirm a tight seal between the bentonite and soils at each location. Soil vapor samples will be collected using 2.7-liter or 6-liter SUMMA® canisters with a calibrated flow controller set for a 24-hour period.

After it is determined that additional sampling is not required, each of the soil vapor points will be removed from the ground and the borehole will be backfilled with any soil cuttings and sealed with a non-shrinking concrete grout or epoxy flush with the pre-existing surface.

If soil vapor sampling as described above cannot be performed due to shallow groundwater or limited access considerations, an air sample will be collected from the basement or crawl space using a SUMMA® canister over a 24-hour period. The basement or crawl space air samples, if required, will be collected using the same procedure described above in the subsection entitled "*Air Sampling*".

Sample Analysis

Prior to sample collection and analysis, the project laboratory will verify in writing that they are capable of detecting the appropriate analytes at a minimum reporting limit of 1 microgram per cubic meter. For indoor and outdoor air samples, the minimum reporting limits for TCE, VC, and carbon tetrachloride shall be 0.25 micrograms per cubic meter. Each sample will be analyzed for chlorinated VOCs by USEPA Method TO-15. Specific chlorinated VOCs that will be reported are listed in Table 1.

All canisters will be sent under chain-of-custody to a New York State Department of Health (NYSDOH)-approved environmental laboratory for analysis. The laboratory analytical report will contain NYSDEC Analytical Services Protocol (ASP) Category B deliverables. Electronic data deliverables will also be provided by the project laboratory.

Quality Assurance/Quality Control Sampling

One duplicate sample will be collected for each set of 20 or fewer samples collected over a 7-day period. Duplicate samples will be collected at indoor air sampling locations.

Reporting

Data from the VI evaluation will be validated, reviewed, and summarized. The data will then be sent to NYSDEC and NYSDOH for review. The validated data will be sent to the property owners.

If warranted based on the data, a vapor mitigation and monitoring strategy will be developed and implemented where required based on the building's foundation design. Mitigation may involve additional sampling, sealing cracks in a slab foundation, installation of a sub-slab depressurization system, crawl space ventilation, modification of the building's HVAC system, or other technique. Buildings with more than one foundation type may require a combination of techniques.

Please contact me at 315-256-3035 if you have any questions.

Sincerely,

Jon S. Fox, P.G.
Principal Geologist

Attachments:
Figure 1 – VOC Concentrations (Detections only)
Table 1 – VOC Reporting List for TO-15 Analyses

Cc: Mark Sweitzer, P.G. (Honeywell)
John Morris, P.E. (Honeywell)
Jim Perazzo, P.G. (ERM)
Maureen Leahy, Ph.D. (ERM)

REFERENCES CITED

ERM, 2016. Final Site Characterization Field Sampling and Analysis Plan – Phase 1: Oak-Materials – River Road 1, 2 and 3 (No.442008) and Former Oak Materials Fluorglas Division – John Street (No. 442049). 20 July 2016.

NYSDOH, 2006. Guidance for evaluating soil vapor intrusion in the State of New York (Final). New York State Department of Health (NYSDOH), Center for Environmental Health, Bureau of Environmental Exposure Investigation, Albany, October 2006, 92 pp.

Figure

OS-APS-026							
15.2 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

OS-APS-027								
17.51 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE	Toluene
µg/l	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.7 J

OS-APS-025							
16.2 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	0.6 J	4	0.5 U	0.5 U	4	0.5 U	0.5 U

JS-APS-001							
14.1 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	0.6 J	110	6	0.5 U	9	0.8 J	0.5 U

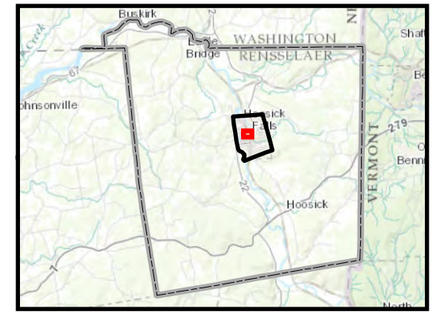
OS-APS-024							
40.2 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	0.5 U	48	0.8 J	0.5 U	16	7	3

JS-APS-002							
7.4 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	0.5 U	30	2	0.5 U	3	0.5 U	0.5 U

JS-APS-003							
8.8 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	1	8	0.5 U	0.5 U	3	0.5 U	0.5 U

JS-APS-005							
10.3 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

JS-APS-004							
61.9 ft	PCE	TCE	cisDCE	VC	1,1,1-TCA	1,1-DCA	1,1-DCE
µg/l	0.5 U	3	0.5 U	0.6 J	2	87	8



Legend

- Approximate Property Boundaries
- Advanced Profiling System (APS) Location
- Exceeds NYSDEC Class GA Standard

NOTES:
APS – Advanced Profiling System (Waterloo)
µg/L – microgram per liter
U – Compound not detected
J – Estimated value

N

0 25 50 100 150 200
Feet

Figure 1: VOC Concentrations (Detections only)
John Street
Village of Hoosick Falls
New York

ERM

G:\Graphics\Clients_A_E\Arnold and Porter\Hoosick Falls\MXD\Sampling\John St\2017_01\JohnSt_VOCs_GW_DataBoxes_20170120.mxd - brett.shaver - 1/20/2017

Table

Table 1
VOC Reporting List for TO-15 Analyses
Vapor Intrusion Evaluation

CAS Number	Analyte
75-27-4	Bromodichloromethane
75-15-0	Carbon Disulfide
56-23-5	Carbon Tetrachloride
108-90-7	Chlorobenzene
75-45-6	Chlorodifluoromethane
75-00-3	Chloroethane
67-66-3	Chloroform
74-87-3	Chloromethane
107-05-1	3-Chloropropene
95-50-1	1,2-Dichlorobenzene
541-73-1	1,3-Dichlorobenzene
106-46-7	1,4-Dichlorobenzene
75-34-3	1,1-Dichloroethane
107-06-2	1,2-Dichloroethane
75-35-4	1,1-Dichloroethene
156-59-2	cis-1,2-Dichloroethene
78-87-5	1,2-Dichloropropane
10061-01-5	cis-1,3-Dichloropropene
124-48-1	Dibromochloromethane
75-71-8	Dichlorodifluoromethane
75-43-4	Dichlorofluoromethane
76-13-1	Freon 113
76-14-2	Freon 114
67-72-1	Hexachloroethane
75-09-2	Methylene Chloride
630-20-6	1,1,1,2-Tetrachloroethane
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethene
156-60-5	trans-1,2-Dichloroethene
10061-02-6	trans-1,3-Dichloropropene
71-55-6	1,1,1-Trichloroethane
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethene
75-69-4	Trichlorofluoromethane
96-18-4	1,2,3-Trichloropropane
75-01-4	Vinyl Chloride