FORMER BARRETT MANUFACTURING AND MICA ROOFING SITES
NYSDEC SITES 224196 and 224197
WORK PLAN ADDENDUM
VAPOR INTRUSION INVESTIGATION – 610 Smith ST

The "*Site Characterization Work Plan for the Former Barrett Manufacturing and Mica Roofing Site*" (Parsons 2016), including clarifications made by letter dated November 10, 2016 (letter from John Patrick Curran on behalf of 610 Smith St. LLC, November 10, 2016), was acknowledged by NYSDEC on December 9, 2016. The purpose of this work plan addendum is to define procedures to be used to conduct a vapor intrusion (VI) investigation at the building at 610 Smith St.

The VI investigation will be completed pursuant to the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006). The VI investigation will include collection of co-located indoor air and sub-slab vapor samples, and outdoor ambient air samples, for analysis for volatile organic compounds (VOCs). As shown on Figure 1, a tar vault lies beneath lies beneath a majority of the central and northern portions of the building and the vault contains about 10 feet of water that overlies about 1.5 feet of DNAPL. Previous sampling of the water in the vault on March 18, 2016 showed that no priority pollutant list volatile organic compounds were detected. Due to the presence of water in the vault that does not contain VOCs, no sub-slab or tar vault air space samples will be collected in the areas of the vault.

The VI investigation will begin with a walk-through of the building prior to sampling, to identify conditions that may affect the proposed investigation, including potential indoor air sources of VOCs (e.g., consumer and industrial products, artist paints or thinners) and other influencing factors. A representative of 610 Smith Street will be asked to respond to a questionnaire to obtain basic information about the structure (e.g., heating and ventilation systems) and potential sources of VOCs within the structure. An "Indoor Air Quality Questionnaire and Building Inventory" form (NYSDOH 2006) will be completed, using visual observations and information obtained from the representative. A copy of the "Indoor Air Quality Questionnaire and Building Inventory" form is included as Attachment 1.

The number and locations for air sampling will be selected during the building walkthrough; it is anticipated that one co-located indoor air and sub-slab air samples will be collected from the first floor outside the area of the tar vault (to the south) over a 24-hour period. This number may be modified based on conditions observed. The sub-slab sample will be obtained using the equipment and Standard Operating Procedures (SOPs) for the Vapor Pin® method (Attachment 2)[1]. The sample point location will be selected to be away from cracks or openings in the floor and away from sub-slab utilities. The co-located indoor air sample location will be in the same room as the sub-slab sample. To the extent possible, the inlet of the canisters for the collection of indoor air will be positioned at approximately 3 to 5 feet above the floor (breathing zone). One duplicate sample (indoor air) will be collected as part of the sampling. In addition, two outdoor ambient air samples will be collected from locations selected based on wind direction conditions at the time of sampling.

[1] The temporary sub-slab sampling point will be installed using a hammer drill to penetrate the concrete slab of the first floor. The drill will create an approximately 5/8-inch diameter hole and a temporary sampling point (i.e., Vapor Pin®) will be installed. A helium tracer gas will be used to verity the integrity of the vapor point seal. After sampling, the sampling point will be removed and the hole will be permanently sealed with hydraulic cement and allowed to cure.

Sub-slab, indoor, and ambient air samples will be analyzed for the list of VOCs identified in Compendium Method TO-15 (USEPA January 1999). All samples that will be used to make decisions on appropriate actions to address exposures and environmental contamination will be analyzed by SGS-Accutest labs, an ELAP-certified laboratory (NY# 10983). Analytical results will be evaluated to assess the potential for vapor intrusion using a multiple lines of evidence approach, taking into consideration constituents detected in groundwater, sub-slab air, and ambient air, and typical background concentrations of constituents in indoor air.

PARSONS

Honeywell

Figure 1
Building Location
610 Smith St.

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.

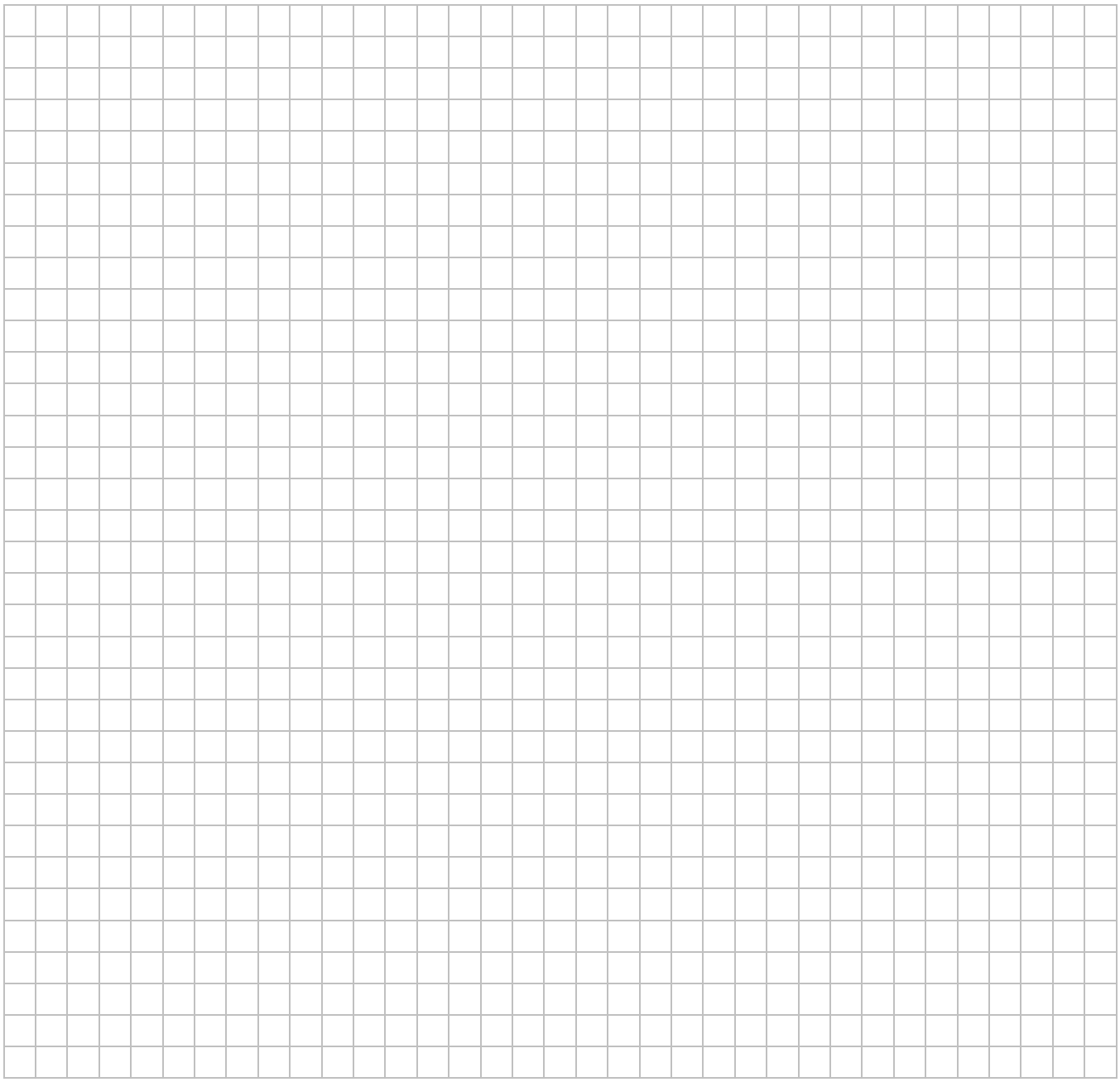
Basement:

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.

Standard Operating Procedure Installation and Extraction of the FLX-VP VAPOR PIN®

Updated March 28, 2016

Scope:

This standard operating procedure describes the installation, use, and extraction of the FLX-VP for 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 FLX-VP for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled FLX-VP [FLX-VP barb fitting with O-ring, FLX-VP base, and silicone sleeve (Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the FLX-VP.

Figure 1. Assembled FLX-VP

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) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of the assembled FLX-VP into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the barb fitting, and tap the FLX-VP into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the FLX-VP to avoid damaging the barb fitting.

Figure 2. Installing the FLX-VP

During installation, the silicone sleeve will form a slight bulge between the slab and the FLX-VP shoulder. Place the protective cap on FLX-VP to prevent vapor loss prior to sampling (Figure 3).

Figure 3. Installed FLX-VP

7) For flush mount installations, cover the FLX-VP with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation)

for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the FLX-VP. This connection can be made using a short piece of Tygon™ tubing to join the FLX-VP with the Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the FLX-VP as possible to minimize contact between soil gas and Tygon™ tubing.

   If you wish to directly connect to FLX-VP accessory (e.g. Swagelok fitting, TO-17 tube, or quick connect) unscrew the barb fitting and replace with accessory (Figures 6 and 7).

Figure 5. FLX-VP sample connection

Figure 6. FLX-VP with Swagelok® connection

Figure 7. FLX-VP with TO-17 Sorbent tube connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the FLX-VP via Mechanical Means (Figure 8). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

Figure 8. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the barb fitting and protective cap and flush mount cover until the next event. If the sampling is complete, extract the FLX-VP.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the FLX-VP (Figure 9). Continue turning the tool clockwise to pull the FLX-VP from the hole into the installation/extraction tool.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

Figure 9. Removing the FLX-VP

3) Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the FLX-VP in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes.

The FLX-VP is designed to be used repeatedly, however, accessories, replacement parts and supplies will be required periodically. These parts are available on-line at VaporPin.CoxColvin.com