Groundwater & Environmental Services, Inc.
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Islandia, NY 11749
T. 800.360.9405

December 22, 2023

Mr. Matthew Hubicki
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C
625 Broadway – 12th Floor
Albany, New York 12233-7014

Re: Soil Vapor Intrusion Work Plan
Carmel ShopRite Plaza
180 Gleneida Avenue
Carmel, New York
NYSDEC Site Number V00104

Dear Mr. Hubicki:

Groundwater & Environmental Services, Inc. (GES) has prepared this *Soil Vapor Intrusion (SVI) Study Work Plan (Work Plan),* which outlines the proposed investigation activities at four (4) tenant spaces (#170, #174, #176, and #178 Route 52, Carmel, New York) at the Carmel ShopRite Plaza located at 180 Glenida Avenue (Route 52) in Carmel, New York (the site). The site is managed under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Program #V00104.

This Work Plan was prepared for the purpose of evaluating the potential for soil vapor intrusion in the tenant spaces identified above in support of the potential shutdown of the subsurface depressurization (SSD) systems located at the site. The SSD systems are specified as engineering control systems in the Site Management Plan for the purpose of mitigating the potential for vapor instrusion. The SSD systems have been in operation since 2010 following completion of remedial actions.

Refer to the *Site Management Plan* and/or *Periodic Review Report* for additional information related to the history of the site. A site location map and a site map indicating pertinent site features are included as **Figures 1** and **2**.

1.0 Sub-Slab Vapor Point Installation

GES proposes the installation of up to two (2) Vapor Pin® sub-slab vapor points in each of the four (4) subject tennant spaces. A 1 ½ -inch hammer drill bit will be utilized to core through the building slab. Utilizing the guide provided in the Vapor Pin® Kit, a ⅝-inch hammer drill bit will then be used to core just below the slab. The drilled boring will be cleaned using the pipe brush

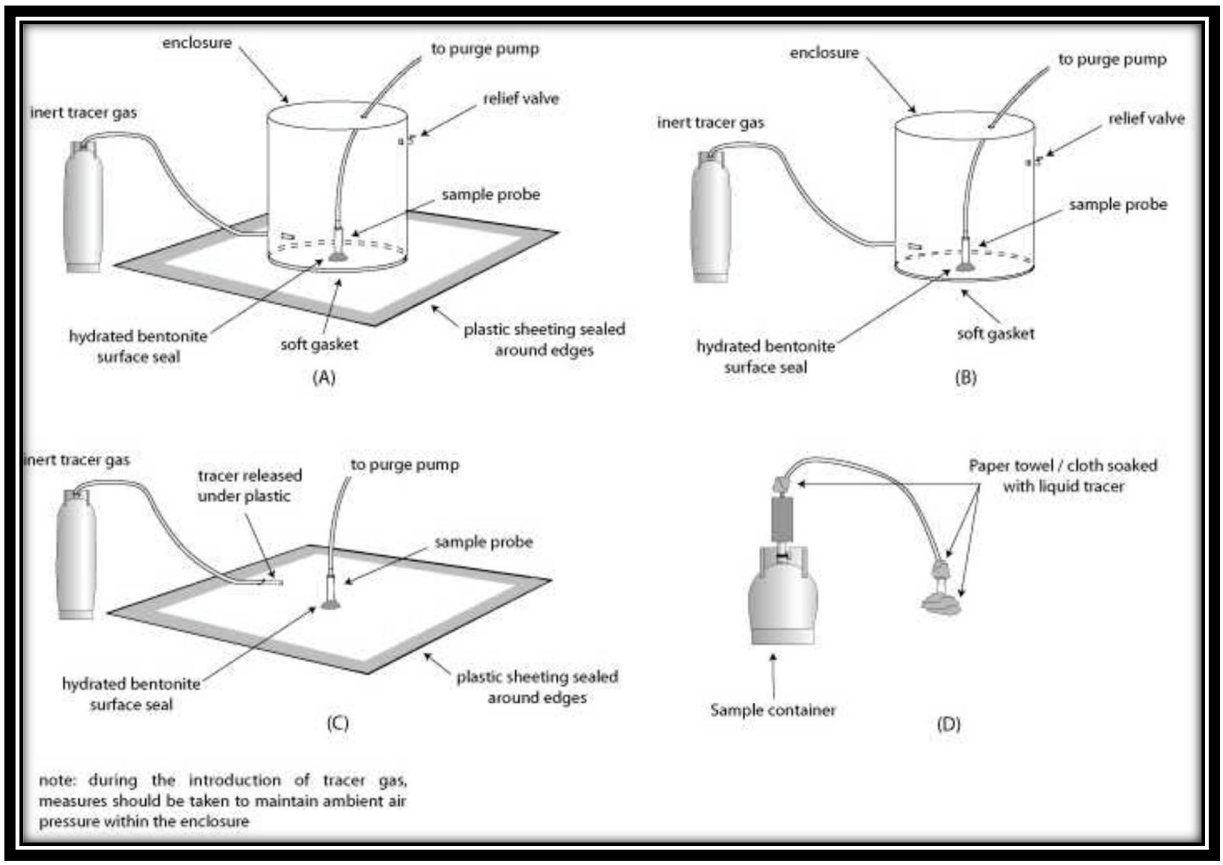
included with the Vapor Pin® Kit to remove any debris, before a brass Vapor Pin® fitted with a silicone sleeve is hammered in-place. After all the sub-slab vapor points are installed, a stainless steel flush mount cover will be used to cover each point.

The proposed sub-slab vapor point locations are outlined on **Figure 2**. The actual locations of each point may be adjusted to account for observed site conditions.

2.0 Pre-Sampling Requirements

Prior to conducting sub-slab sampling, GES will confirm the integrity of the newly installed sub-slab sampling points. To verify the integrity, a tracer gas will be used to test the seal. To complete this quality assurance/quality control (QA/QC) measure, helium will be used as the tracer gas to conduct the leak test. Using an enclosure (e.g, helium shroud) over the sampling point, the atmosphere within the immediate vicinity of the area where the sampling point intersects the ground surface will be enriched with helium. One to three volumes (the volume of the sample probe and tube) of air will be purged from the vapor point using a personal air sampling system and a flow module (vacuum pump). The purging flow rate should not exceed 0.2 liters per minute (L/min). The sample vapor point will be tested for helium breakthrough before the collection of the soil gas sample. Diagram 1 displays the common tracer gas methods.

Diagram 1



3.0 SVI Sampling Scope of Work

SVI sampling will be completed during the 2024 heating season, prior to March 31, 2024, under normal heating season conditions prior to and during the sampling event.

SSD System Shutdown

All SSD systems will be temporarily shutdown at least 30 days prior to SVI sampling. The intent of the SSD system shutdown is to allow SVI sampling under static conditions. SSD system exhaust ports will be capped during the shutdown process.

Pre-sampling Inspection and Preparation of Properties

In accordance with the 2006 York State Department of of Health (NYSDOH) Soil Vapor Intrusion guidance document, GES will complete a building and product inventory survey to document the floor layout, physical building conditions, any potential sources of volatile chemicals that may be been present within each tennant space that may affect or interfere with the planned sampling activities. Potential indoor interferences will be noted on the NYSDOH *Indoor Air Quality Questionnaire and Building Inventory* Forms provided as **Appendix A**.

Each of the building units will be screened with a photoionization detector (PID) and inspected for products that may contain or potentially contain volatile organic compounds (VOCs).

Sampling Locations

Sub-slab vapor samples will be collected to characterize the nature and extent of soil vapor contamination, if any, imediately beneath the building. Sub-slab samples will be collected concurrently with indoor and outdoor air sampling activities. Indoor air samples will be co-located to the same numbered sub-slab sample (i.e. indoor air sample IA-1 will be located above the slab in the same location as sub-slab point SS-1). The following sampling locations will be sampled during the 2023/2024 heating season, which is defined between November and April of each year.

- Sub-Slab (SS) Vapor Samples: SS-1 through SS-8
- Indoor Air (IA) Samples: IA-1 through IA-8
- Outdoor Air (OA) Samples: OA-1 and OA-2

A table summarizing each tenant space with the corresponding sample location and sampling details is included as **Table 1**. The proposed sub-slab vapor point locations are outlined on **Figure 2**.

4.0 Sampling Method

Sub-Slab Vapor Samples

Following the helium tracer test and purging activities described in **Section 2.0**, a soil-gas sample will be collected using time weighted 6-liter Summa® canisters fitted with 8-hour flow controllers. Batch certified Summa® canisters will be provided by a NYSDOH certified laboratory. The Summa® canister samples will be analyzed by Environmental Protection Agency (EPA) Method

TO-15 with a minimum reporting limit of 1 micrograms per cubic meter (µg/m^3) for sub-slab vapor samples.

A QA/QC sample in the form of a field duplicate sample will be collected from one (1) sub-slab sample.

Indoor Air Samples

Indoor air samples will be collected from each tenant space concurrently with the sub-slab samples. The indoor air samples will be collected using time weighted 6-liter Summa® canisters fitted with 8-hour flow controllers. Each canister will be set at a height of approximately three feet above the floor and adjacent to the corresponding sub-slab sampling location. The samples will be collected concurrently with the sub-slab sampling activities and will be submitted for analyses using EPA Method TO-15 with a minimum reporting limit of 0.20 µg/m^3 for indoor air samples.

A QA/QC sample in the form of a field duplicate sample will be collected from one (1) indoor air sample.

Outdoor Air Samples

Two (2) ambient outdoor air samples will be collected from secure locations concurrent with the sub-slab and indoor air samples. The outdoor air samples will be collected in the breathable zone (approximately 3 feet above ground surface). The samples will be collected concurrently with the sub-slab sampling activities and will be submitted for analyses using EPA Method TO-15 with a minimum reporting limit of 0.20 µg/m^3 for outdoor air samples.

SSD System Reactivation

Following the completion of SVI sampling activities, the SSD system exhaust ports will be uncapped and the systems reactivated.

5.0 Soil Vapor Intrusion Reporting

A summary report shall be prepared and submitted to the NYSDEC within 60-days of receipt of the laboratory report. This report will include a summary of the investigation methodology and results obtained. This report will also include the following attachments: the laboratory analytical data in PDF format; the NYSDOH Indoor Air Quality Questionnaire and Building Inventory Form for each tenant space; a summary of the tabulated analytical testing data tables compared to NYSDOH May 2017 Matrices; photo logs; and figures. In addition to the tabulated analytical testing data, a third party data validator will be contracted to prepare a Data Usability Summary Report (DUSR) for the laboratory results. Data generated from the initial SVI sampling event will be used to evaluate the need for continued SSD system operation and/or additional SVI sampling.

Sincerely,
Groundwater & Environmental Services, Inc.

Michael DeGloria Digitally signed by Michael DeGloria Date: 2023.12.22 11:22:30 -05'00'

Genevieve Bock, PE
Principal Engineering Manager

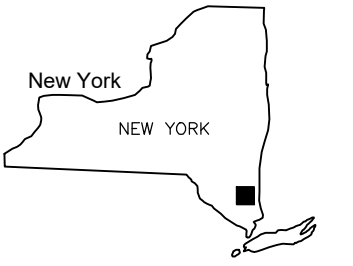
Michael C. DeGloria, PG
Principal Project Manager

Attachments

Figure 1 – Site Location Map
Figure 2 – Site Map
Table 1 – Sample Details
Appendix A – NYSDOH *Indoor Air Quality Questionnaire and Building Inventory* Forms

Figures

Source:
USGS 7.5 Minute Series
Topographic Quadrangle, 1981
Lake Carmel, New York
Contour Interval = 10'



Quadrangle Location

Site Location Map

Regency Centers
Carmel Shop Rite Center
180 Gleneida Avemue
Carmel, New York

Drawn
M.R.H.
Designed
J.M.
Approved

Date
10/20/23
Figure
1

Scale In Feet
0 2000

Groundwater & Environmental Services, Inc.

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Site Map

Regency Centers
Carmel Shop Rite Center
180 Gleneida Avemue
Carmel, New York

Drawn
M.R.H.
Designed

Approved

Date
10/20/23
Figure
2

Scale In Feet
0 20

Groundwater & Environmental Services, Inc.

Table

Table 1 - Sample Details
Carmel ShopRite Plaza
V00104
180 Gleneida Avenue
Carmel, New York 10512

Building ID	Address	Media	Sample Location	Analyses	Regulator	Comments	Summas	Duplicate
RC Pizza Restaurant, LLC (AKA Europa Pizza)	178 Route 52	Subslab	SS-1	TO-15	8-hour		1	
		Subslab	SS-2	TO-15	8-hour		1	
		Ambient	IA-1	TO-15	8-hour		1	
		Ambient	IA-2	TO-15	8-hour		1	
New Journey Nail and Spa	176 Route 52	Subslab	SS-3	TO-15	8-hour		1	
		Subslab	SS-4	TO-15	8-hour		1	
		Ambient	IA-3	TO-15	8-hour		1	
		Ambient	IA-4	TO-15	8-hour		1	
Electric Paradise Tanning II	174 Route 52	Subslab	SS-5	TO-15	8-hour		1	
		Subslab	SS-6	TO-15	8-hour		1	
		Ambient	IA-5	TO-15	8-hour		1	1
		Ambient	IA-6	TO-15	8-hour		1	
Chinatown Restaurant	170 Route 52	Subslab	SS-7	TO-15	8-hour		1	1
		Subslab	SS-8	TO-15	8-hour		1	
		Ambient	IA-7	TO-15	8-hour		1	
		Ambient	IA-8	TO-15	8-hour		1	
Outdoor	N/A	Ambient	OA-1	TO-15	8-hour		1	
		Ambient	OA-2	TO-15	8-hour		1	
						Totals	**18**	**2**

Appendix A

Soil Vapor Intrusion - Structure Sampling Building Questionnaire **Structure ID :** _____

Site No. : _____ **Site Name** : _____

Date: _____ **Time:** _____

Structure Address : _____

Preparer's Name & Affiliation : _____

Residential ? ☐ **Yes** ☐ **No** **Owner Occupied ?** ☐ **Yes** ☐ **No** **Owner Interviewed ?** ☐ **Yes** ☐ **No**

Commercial ? ☐ **Yes** ☐ **No** **Industrial ?** ☐ **Yes** ☐ **No** **Mixed Uses ?** ☐ **Yes** ☐ **No**

Identify all non-residential use(s) : _____

Owner Name : _____ **Owner Phone** : ( ) _____ - _____

Secondary Owner Phone : ( ) _____ - _____

Owner Address (if different) : _____

Occupant Name : _____ **Occupant Phone** : ( ) _____ - _____

Secondary Occupant Phone : ( ) _____ - _____

Number & Age of All Persons Residing at this Location : _____

Additional Owner/Occupant Information : _____

Describe Structure (style, number floors, size) : _____

_____

Approximate **Year Built** : _____ Is the building **Insulated**? ☐ Yes ☐ No

Lowest level : ☐ Slab-on-grade ☐ Basement ☐ Crawlspace

Describe Lowest Level (finishing, use, time spent in space) : _____

_____

Floor Type: ☐ Concrete Slab ☐ Dirt ☐ Mixed : _____

Floor Condition : ☐ Good (few or no cracks) ☐ Average (some cracks) ☐ Poor (broken concrete or dirt)

Sumps/Drains? ☐ Yes ☐ No Describe : _____

Identify other floor penetrations & details : _____

_____

Wall Construction : ☐ Concrete Block ☐ Poured Concrete ☐ Laid-Up Stone

Identify any wall penetrations : _____

_____

Identify water, moisture, or seepage: location & severity (sump, cracks, stains, etc) : _____

_____

Heating Fuel : ☐ Oil ☐ Gas ☐ Wood ☐ Electric ☐ Other : _____

Heating System : ☐ Forced Air ☐ Hot Water ☐ Other : _____

Hot Water System : ☐ Combustion ☐ Electric ☐ Boilermate ☐ Other: _____

Clothes Dryer : ☐ Electric ☐ Gas Where is dryer **vented** to? _____

If combustion occurs, describe where air is drawn from (cold air return, basement, external air, etc.) : _____

_____

Fans & Vents (identify where fans/vents pull air from and where they vent/exhaust to) : _____

_____

Describe factors that may affect indoor air quality (chemical use/storage, unvented heaters, smoking, workshop):

Attached garage ? ☐ Yes ☐ No Air fresheners ? ☐ Yes ☐ No

New carpet or furniture ? ☐ Yes ☐ No What/Where ? _____

Recent **painting** or **staining** ? ☐ Yes ☐ No Where ? : _____

Any **solvent** or **chemical-like** odors ? ☐ Yes ☐ No Describe : _____

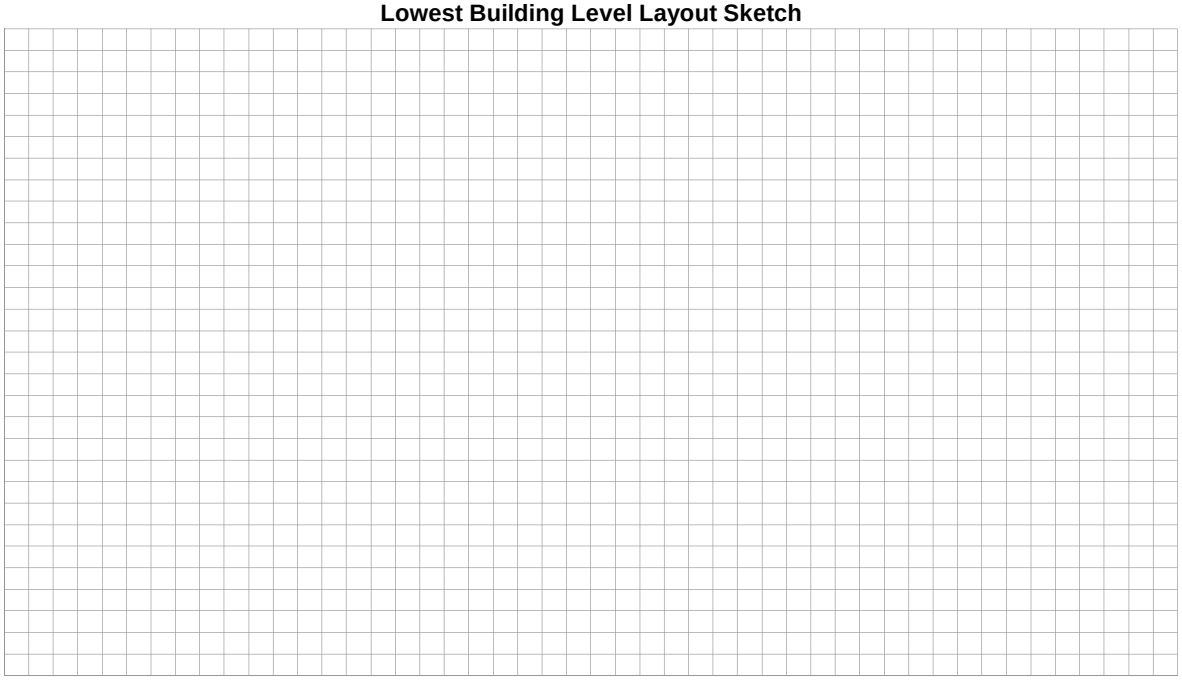
Last time **Dry Cleaned** fabrics brought in ? _____ What / Where ? _____

Do any building occupants use solvents at work ? ☐ Yes ☐ No Describe : _____

Any testing for Radon ? ☐ Yes ☐ No Results : _____

Radon System/Soil Vapor Intrusion Mitigation System present ? ☐ Yes ☐ No If yes, describe below

Lowest Building Level Layout Sketch



- Identify and label the locations of all sub-slab, indoor air, and outdoor air samples on the layout sketch.
- Measure the distance of all sample locations from identifiable features, and include on the layout sketch.
- Identify room use (bedroom, living room, den, kitchen, etc.) on the layout sketch.
- Identify the locations of the following features on the layout sketch, using the appropriate symbols:

B or **F**	Boiler or Furnace	o	Other floor or wall penetrations (label appropriately)
HW	Hot Water Heater	**xxxxxxx**	Perimeter Drains (draw inside or outside outer walls as appropriate)
FP	Fireplaces	######	Areas of broken-up concrete
WS	Wood Stoves	● SS-1	Location & label of sub-slab vapor samples
W/D	Washer / Dryer	● IA-1	Location & label of indoor air samples
S	Sumps	● OA-1	Location & label of outdoor air samples
@	Floor Drains	● PFET-1	Location and label of any pressure field test holes.

Structure Sampling - Product Inventory

Homeowner Name & Address: ________________________________ **Date:** __________

Samplers & Company: ________________________________ **Structure ID:** __________

Site Number & Name: ________________________________ **Phone Number:** __________

Make & Model of PID: ________________________ **Date of PID Calibration:** __________

Identify any Changes from Original Building Questionnaire : ________________________________

Product Name/Description	Quantity	Chemical Ingredients	PID Reading	Location